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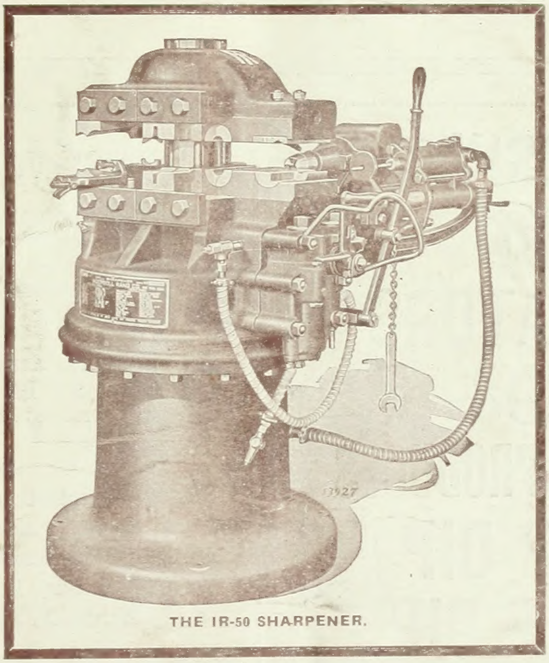

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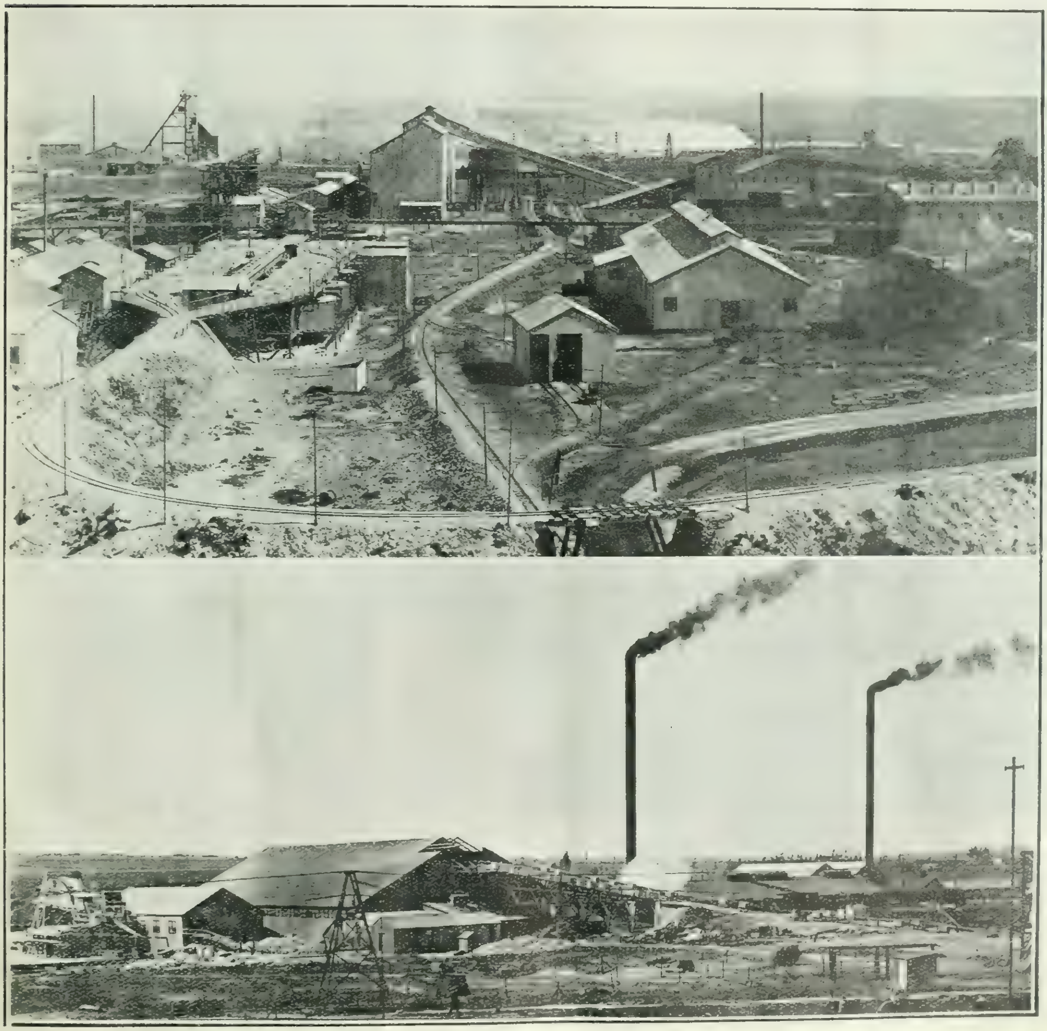
The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 24, 1923. No. 1643.

Where the Reduction Works of the Two Langlaagtes are to be Centralised.



These two pictures show the present reduction works of the Consolidated Langlaagte (at top), and (below) that of the Langlaagte Estate. It is proposed to save a million pounds by merging the two companies and concentrating reduction operations at the Consolidated Langlaagte.

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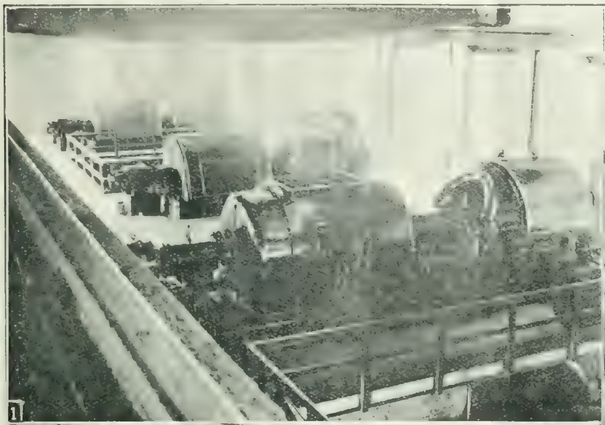
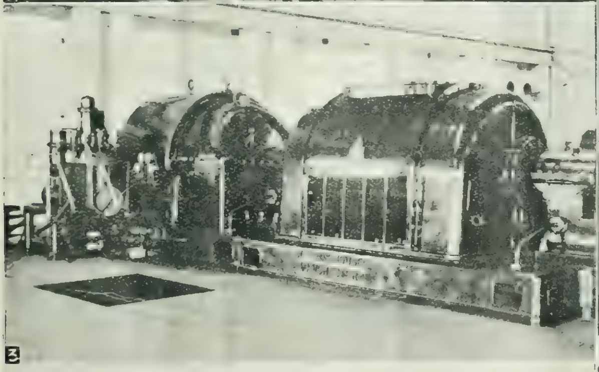
De Beers' Great Central Power Station.

INCREASED POWER FOR NEW DIAMOND PROCESS—INSTALLATION OF NEW TURBO-GENERATORS—ALTERATIONS TO POWER STATION—NEW BOILER EQUIPMENT—POSSIBLE VAAL RIVER SCHEME.

By Cecil M. Henderson (B.Sc., University of Capetown).

In order to meet the increased power requirements of the new crushing process, which will in future be employed in the recovery of diamonds at the De Beers Consolidated Mines, Kimberley, the electrical power establishments at the Central Power Station, Wesselton, have recently undergone considerable extension. The original De Beers plant, put down shortly after the Boer war, consisted of three Parsons type turbo-alternators of 1,500 k.w. capacity each, together with a battery of [illegible] type boilers. Later, in order to meet further requirements necessitated by the installation of electric driven winding machines and pulsator, two units of 4,000 k.w. and 6,000 k.w. (Westinghouse-Rateau type) were installed prior to the outbreak of war in 1914. This brought the total rating up to 14,500 k.w.





These pictures of the De Beers' Central Power Station, taken exclusively for the "S.A.M. & E.J.," show: (1) The new 6,000 k.w. machines at the station; (2) The condenser water outlet, with Bulfontein machine in the background; (3) 6,000 k.w. Westinghouse-Rateau turbo-generator at the station; (4) The Central Power Station exterior from the Vlei; and (5) The boiler installation at the station.

The [illegible] of [illegible] [illegible] was damaged a year or two ago [illegible] that it was put out of commission, leaving the load [illegible] between the Westinghouse 2,000 and the [illegible] Parsons type units. The power station [illegible] is located at the centre of gravity of the principal mines, and supplies energy to the [illegible] lighting and tramway systems in addition to the pumping plants at the Wesselton, Bultfontein and Dutoitspan Mines and the [illegible] crushing machines [illegible].

New Treatment Plant.

The new crushing plant for direct treatment of the blue ground will be the largest of its kind in South Africa and will increase the electrical load on the Central Station at Wesselton considerably, as the crushers will be all electrically-driven. To cope with this increased load the total generating capacity has been increased by the installation of two units of 6,000 k.w. each. The new machines consist of Curtis turbines driving 6,000 k.w. G.E.C. three-phase alternators at 3,600 r.p.m. The power house has undergone structural alterations, which consist mainly of the lengthening of the generating room by about 50 feet. At the north end an annex has been built of pre-cast concrete, and the penstocks returning the condenser water to the [illegible] all converge into it. The condenser water is returned into a part of the [illegible] separated by an earth dam, thus ensuring the best cooling arrangement. The new machines are American built, while he condensing apparatus is of English manufacture; the condenser air extraction pumps being on the same principle as the Bunsen laboratory water pump, in which the air is withdrawn from the condenser by entrainment within the folds of a column of water which is given a spiral motion by a small water motor located at the head of the pump.

The boiler installation consists of six marine-type boilers, two of which are still under construction and will be ready for service in a few weeks' time.

All the machines generate at the feeder pressure of 5,000 volts. The switch panels are of grey marble, and are equipped with duplicate switches corresponding to front and back bus-bars located in concrete cubicles below the switchboard gallery.

Kimberley, as is well known, has an up-to-date electric tramway equipment which is probably not equalled by any town of similar population in the world. The total mileage of track in operation has been increased recently by the completion of a new tramway loop through Newton. It is a matter of surprise to most people that although the tramway system of the Diamonds Fields is so elaborate the trams only consume a few per cent. of the total electrical output at Wesselton.

Surplus Power.

Despite all the additional motors for the crushing plant, which will take current from Wesselton, it is likely that there will be a large kilowattage of surplus power, which might appropriately be used for pumping and irrigation schemes along the Vaal River, or for driving main line traffic between the Vaal and Orange if a scheme of electrification is commercially feasible.

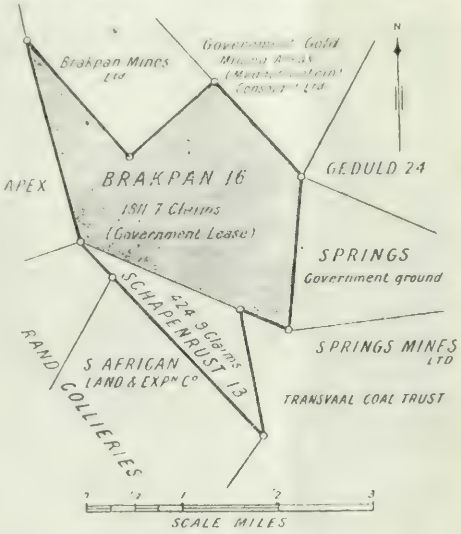
At present the Central Power Station is running on a much reduced load as mining operations are not in full swing, and indeed the company has in hand large stocks of dumped [illegible] awaiting treatment when the new crushing plants start operating.

The coal consumption is at present 60 tons per day. The company takes delivery of the coal at the railway siding Kimberley, and conveys it by means of its own electric locomotives to the power station at Wesselton. The Wesselton station has now a total capacity of 20,000 k.w., and is thus one of the largest stations in the Union.

The Brakpan Deal.

INCREASE OF CAPITAL: SCHAPENRUST CLAIMS TAKEN OVER.

It is officially announced that the Board of Directors of the Brakpan Mines have decided to recommend that the capital of the company be increased by the issue of 170,000 new shares. The price at which these shares will be offered to shareholders is 30s., which will constitute a substantial bonus to shareholders, who, it is felt, are entitled to some recompense for the severe curtailment of the dividend distributions of recent years resulting from the very heavy appropriations from profits which it was found necessary to make in order to meet capital expenditure. The proceeds of the issue are to be employed firstly in furnishing the funds required to complete the development programme, and, secondly, for the purpose of completing the purchase of the Schapenrust claims, which have been acquired at a very attractive figure. By this arrangement funds that would have had to be appropriated out of this year's profit for capital expenditure will become available for distribution. Apart from this, the prospects of the mine are such that, when considered in conjunction with the saving to the company through the elimination of the Schapenrust royalty, a charge which would have become burdensome with rising profits, the increase of capital should have no appreciable effect on the rate of the dividend distributions of the company. A circular to shareholders dealing with these matters is now in course of preparation.



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Knight Central's Swan Song.

LAST ANNUAL REPORT.

It is expected that the Knight Central will close down next week, and the last annual meeting of the company is called for May 8 next. At the end of 1922 the company held cash and investments and cash assets, after allowing for liabilities, to the value of £183,431. The amount payable by the company under the Miners' Phthisis Act, 1919, on ceasing operations is estimated at £34,000. In the course of his annual report, the Consulting Engineer, Mr. J. Whitehouse, writes: "In accordance with the decision made by the Board in 1917 to discontinue development, the operations of the mine have again been confined to extracting ore already developed; a limited amount of internal work only having been done, amounting to 405 feet for the year. Owing to the dislocation of operations resulting from the strike, which extended from the 10th January to the 17th March, a serious loss, amounting to £14,963, was sustained during the first three months of the year. The profits during the succeeding months, however, more than balanced this loss, and a final profit of £7,090 was obtained. The working costs again showed a very material reduction of 4s. 10d. per ton milled, the average for the year having been 18s. 10d. as against 23s. 8d. during 1921. In this average of 18s. 10d. are included the costs for the first three months of the year, which were abnormally high owing to the strike. The average costs during the last six months were 16s. 6d. per ton, which very satisfactory figure indicates the efficient manner in which the mine has been managed. Owing to the depleted state of the ore reserve, the yield per ton for the year showed a further decline of 0·6 dwt. There remained in the ore reserve at the end of the year 25,400 tons of a value of 5·6 dwt. per ton. The cleaning up of the old workings and the reclaiming of pillars in the upper levels has been continued during the year, and the tonnage obtained from this source has been a large factor in maintaining profitable operations. Such work, however, has only a limited scope, and, with the small tonnage in reserve, it has become more and more difficult with each succeeding month to maintain the output. The mine is expected to carry on operations until the end of March, 1923. By that time all the payable ore in reserve at the end of 1917, together with other tonnage since developed, will have been worked out, and the company's milling operations will terminate." The following tabulation summarises the salient features of the work of the past three years:—

	1920.	1921.	1922.
Tonnage milled	295,000	326,400	297,870
Working costs per ton ...	27s. 3d.	23s. 8d.	18s. 10d.
Revenue per ton with gold at 84s. per ounce ...	24s. 6d.	20s. 5d.	17s. 11d.
Working Loss per ton with gold at 84s. per ounce	*2s. 9d.	*3s. 3d.	*0s. 11d.
Working Loss with gold at 84s. per ounce	*£40,813	*£53,023	*£13,640
Additional revenue represented by difference between 84s. per ounce and actual price realised	£109,413	£83,659	£20,730
Total working profit ...	£68,600	£30,636	£7,090
Development footage ...	2,050	1,004	405
Ore reserve, tonnage ...	150,700	147,800	25,400
Average value of ore reserve, dwts. per ton	6·1	5·6	5·6

* Loss.

Mining Men and Matters.

Dr. E. T. Mellor and Mr. A. P. [illegible] [illegible] are [illegible] Rhodesia.

* * *

The annual meeting of the Transvaal Chamber of Mines will be held next Monday at 2.30 p.m.

* * *

Mr. Archibald Simpson, of the English Electric Co., Ltd., Capetown, has been on a business visit to the Rand.

* * *

Dr. W. A. Caldecott has been appointed Technical Adviser to the Department of Mines and Industries, rendered vacant by Dr. M. van der Byl's acceptance of the full-time post of Chairman of the Electricity Board.

* * *

Dr. Leo Krige, Senior Government Geologist, accompanied by Mr. Pirow, Inspector of Mines, Johannesburg, has left Pretoria for Carnarvon to measure the temperature of the borehole there at a depth of 5,000 feet, and also to report on the atmospheric pressure at that depth.

* * *

Mr. John Stroyan, of Lanrick, J.P., D.L. for Perthshire, for the western division of which county he sat in the Home Parliament, formerly actively and successfully associated with Rand mining enterprise, but now resident in Scotland, is paying a short visit to Johannesburg, the scene of his earlier labours and success, accompanied by Mrs. Stroyan.

* * *

Mr. Richard Hosken has gone to Capetown to meet Mr. Mainprice, chairman, and Mr. Brearley, managing director of Messrs. Brown and Bailey, steel manufacturers, of Sheffield, who arrived by the Edinburgh Castle. Messrs. Mainprice and Brearley are on a business and pleasure trip. Mr. Brearley is the inventor of stainless and rustless steel, and is one of the foremost steel experts of the world.

* * *

Colonel F. R. Collins, C.B.E., Chief Mechanical Engineer, S.A. Railways, and the seven mechanical engineers from the various railway workshop depots of the Union went recently to Vereeniging on the invitation of the Union Steel Corporation of South Africa to view the latter's works at that place, and also those of the Victoria Falls Power Company.

* * *

The Social Club of the Union Miniere du Haut Katanga held an exhibition of photographs at Elisabethville in July last, and invited the Rhodesia Chamber of Mines to send photographs of mines in Rhodesia for display thereat. Many excellent photos of some of the leading mines in Rhodesia were sent for exhibition, and were very highly appreciated by the authorities of the Union Miniere.

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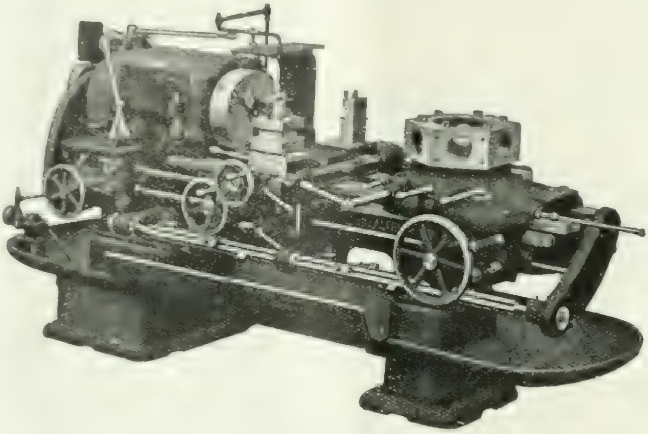

An Exhibition and Demonstration

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All Interested are Cordially Invited.

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The Outlook for Tin, Copper and Lead.

AUTHORITATIVE REVIEW OF CONDITIONS DURING LAST YEAR.

In the course of a special report dated February 17 last, the *Statist* says:—

Copper.

Copper has probably got on to a more normal basis than has any other of the non-ferrous group, the reason being that the chief seat of production lies in North and South America, which continents were, of course, comparatively remote from the European upheaval and where, if the influence of the latter was very evident at the time, its effects have been less insistent. World production was speeded up duirng the war, rising from 986,375 metric tons in 1913 to 1,434,433 tons in 1917. In 1918, consequent on the somewhat sudden cessation of hostilities, the output showed a slight decline at 1,408,086 tons, and fell away further to 984,483 tons in 1920. Stocks, however, were meanwhile accumulating in the U.S.A. owing to the cessation of war requirements and the slow revival of peace demand, and in consequence the scale of operations at the mines was cut down drastically. For 1921 the total world production amounted to only 529,643 tons. An important contributory factor in inducing the curtailment of production in the U.S.A. was the enormous accumulation of war scrap material all over the world. The period of curtailed output enabled this to be worked off, and the market is now free of this incubus. A general resumption of operations at the North American mines was witnessed last spring. Refined copper output there during 1922 showed an increase over that of 1921, and the expansion would probably have been greater but for the shortage of suitable labour. Meanwhile, South American output has been increasing also, and in order to safeguard against too keen competition on the part of the cheap producers there, a North American group, represented by the Anaconda Copper Company, recently acquired a majority-interest in the Chile Copper Company. At the present moment, consumption and production appear pretty evenly balanced. The fact that European demand is still below normal is compensated for by an enhanced consumption in America, where the metal is not only ousting its war-time substitutes, but also is being diverted to new uses as a result of active propaganda on the part of the industry The ruling price is generally regarded as reasonable and likely to remain fairly steady in the near future, even though American demand broadens still further and European buying-power increases, on account of the expanding tendency of production.

Tin.

Within the past few years the price of tin has fluctuated considerably, touching about £420 in February, 1920, and sagging to about £140 in February, 1922. At the present time (February 17) the value is around £185, which is regarded as not unreasonable, and the general position of the metal is considered comparatively sound. World visible supplies are not abnormal. There exists, also, however, an "invisible" supply not revealed in the semi-official statistics, which is the result of the "holding" policy initiated by the F.M.S. Government and Dutch Colonial authorities in the East, at the beginning of 1921. These bodies acquired, over a period of some months, a block of tin at an average price of well over £200, with a view to enabling the mines in the F.M.S. and Dutch Islands to continue operations. No opportunity favourable to a general liquidation of this metal without loss has so far occurred. Meanwhile, therefore, although the holders are in a strong position and have declared their intention of not forcing a sale. market sentiment is inevitably held in check by the possibility of the ultimate liquidation of this block, which amounts to something like 16,000 tons. On balance, the visible supply has diminished slightly during the past year, being 22,500 tons on January 31, 1923, against 25,500 tons on January 31, 1922, whilst the "invisible" supply has been reduced by about 2,000 tons. During 1922, American consumption was encouragingly brisk. Chinese stocks have been worn down, and it is believed that ore reserves in Bolivia have been reduced. Provided, therefore, that consumption in the U.S.A. continues on its present active scale, and no setback occurs in general world demand, the outlook favours a fairly firm market.

Lead.

War conditions and the troubled events of the post Armistice years have had a marked influence on the lead market. As was only to be expected, the world output expanded considerably during the period 1914-1918, rising indeed, from 1,148,122 tons in 1913 to 1,165,134 tons in 1917. The year 1918 saw the beginning of a retrograde movement in production, and by 1921 the figure had fallen to 853,782 tons. Apart from commercial considerations, this was due largely to labour unrest in producing countries. A prolonged strike at Broken Hill, in Australia, held up production there, and even at the present time, despite a high price for the metal, the scale of output in that country is only about 100,000 tons annually against a total capacity of around 200,000 tons. Spain's prominence as a lead producer seems meantime to be waning, in any case, as far as supplies to the United Kingdom are concerned; her output in 1913 was 203,000 tons, while in 1921 it was not more than 120,000 tons. More encouraging is the expansion in Mexican production, which seems to be getting back to its pre-war level of around 100,000 tons annually. During the first half of 1922, its output was about 44,000 tons. Increased activity has also been seen in Burma, but the total output there is still comparatively small. During the past few weeks prices have been remarkably firm, both in London and in New York, on anticipations that supplies are likely to fall short of demand in the near future.

Wireless.

It appears that several alterations have been made by the Select Committee on the Wireless Telegraph Bill, which was framed to confirm and give effect to the agreement recently arrived at between the Union Government and the Marconi Wireless Telegraph Co. A new clause gives power for the expropriation of land required for radio stations if negotiations for its purchase fail. The capital of the South African Wireless Company, which is to be formed for the purpose of operating the scheme, is fixed at half a million sterling, with a proviso that it may be increased or decreased with the consent of the Government. The Marconi Co. is to take up four-fifths of the shares at par and to offer the remainder to the South African public. The clause which provides that the site for the station shall be a sufficient distance inland to be immune from attack by gunfire from the sea will not be insisted upon—owing to difficulty of obtaining a suitable site so far as the receiving station is concerned, though it will still apply to the transmitting station, which will be out of range of gunfire. Provision is also made in the new agreement ensuring the right of the South African Wireless Company to use all patent rights, present and future, owned or controlled by the Marconi Co., free from any payment.

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CONGO BORDER CONCESSIONS.

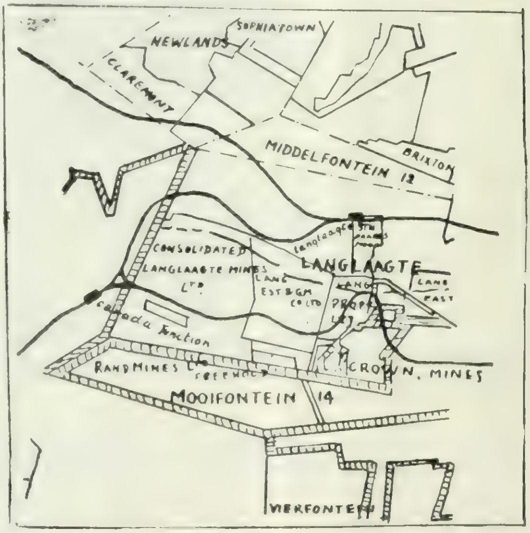
"MINERALS SEPARATION" BACKING.

Mr. F. L. Hosmer, formerly general manager of the Katanga Copper Mines and now consulting engineer to the new company, the Rhodesian Congo Border Concession, passed through Johannesburg this week on his way north to the property of the new undertaking. The concession covers some 50,000 square miles, bounded by Angola and the Congo Border, at the angle of which it lies, and, as the geology is the same as that of the Southern Congo, Mr. Hosmer is optimistic regarding its mineral prospects. N'Dola, the last station on the Rhodesian side of the border, will be the headquarters of the new venture, and Mr. [illegible], formerly [illegible] of Mines for the [illegible], will be the general manager. A competent trained staff will be sent out, and already Mr. Hosmer has engaged a carefully selected band of trained men with South African experience in exploration prospecting work. It may be explained that the Rhodesian Congo Border Concession has acquired a five years' grant made by the British South Africa ("Chartered") Company. The latter is entitled to an allotment of 15,000 shares, fully paid, out of the former's total capital of £[illegible] in £1 shares, of which 50,000 are issued. The balance of [illegible] will be issued to the [illegible] vendors in satisfaction of the purchase consideration, and out of these the 15,000 shares due to the Chartered Company will be handed over. It is a condition of the concession that £[illegible] shall be spent on bona fide prospecting of the area, and upon development of such mineral deposits as may be discovered by the company, of £9,000 per annum. Three directors of the Minerals Separation Company are on the Board of the new company, and [illegible] the well-known engineer Mr. Chester Beatty, who is chairman of the Selection Trust. With the financial and technical resources of the Minerals Separation behind it, the technical and local experience of Mr. Hosmer to guide it, and an area of undoubted mineral richness to exploit, a successful future for the company seems assured.

Chamber of Mines Annual Report.

From the annual report of the Transvaal Chamber of Mines, to be presented at the annual meeting next Monday, we take the following: Freight on Gold.—The agreement with the Union-Castle Mail Steamship Company, Ltd., for the carriage of gold came to an end on September 30th, 1922. The new contract was negotiated in London, and is for a period of two years, in continuance with the extension of the old contract. Despite very strong representations, the Union-Castle Company has increased the rate from 1s. 3d. to 1s. 6d. per cent. Marketing of Gold.—Steps are being taken to alter the agreement with the Bank of England regarding the marketing of gold. It is felt that the time has now arrived when the gold mining industry should be able to sell its product direct to countries requiring it, if advantage can be gained by doing so. It is thought, however, that this freedom of action will not largely influence the present marketing arrangements. All the gold produced by the members of the Chamber is now being refined by the Rand Refinery, Ltd., and the new forms of insurance policies which this change of procedure necessitated have been generally adopted. International Labour Organisation.—The 1922 International Labour Conference was held in Geneva during October. Mr. W. Gemmill, the Chamber's Actuary and Labour Adviser, was appointed the South African Employers' Delegate, but was unable to attend, and his place was taken by Mr. David Wilkinson, Consulting Engineer of the New Consolidated Gold Fields, Ltd. The Conference elected Mr. Gemmill one of the six employers' representatives on the governing body of the International Labour Office. Publicity.—In order to ensure a due measure of publicity for the Gold Mining Industry, a news service, termed "The South African Industrial News Service," has been established by your Committee for the purpose of disseminating reliable and accurate information in regard to industrial matters. British Empire Exhibition, 1924.—The importance of the British Empire Exhibition to be organised in 1924 necessitates some participation by the gold mining industry, and a technical sub-committee is discussing the arrangement of a suitable exhibit. The Standing Committee on Dust Sampling is also preparing an exhibit illustrative of dust prevention work on the mines, and the South African Institute for Medical Research something similar in connection with the prevention of miners' phthisis. Mr. W. H. Dawe has kindly consented to act as the industry's representative on the Exhibition Committee at Capetown, with Mr. F. G. A. Roberts as his alternate. The exporting collieries have decided to engage space and take part in this exhibition. The nature of the exhibit is being considered.

ROUNDING OFF THE CROWN MINES.

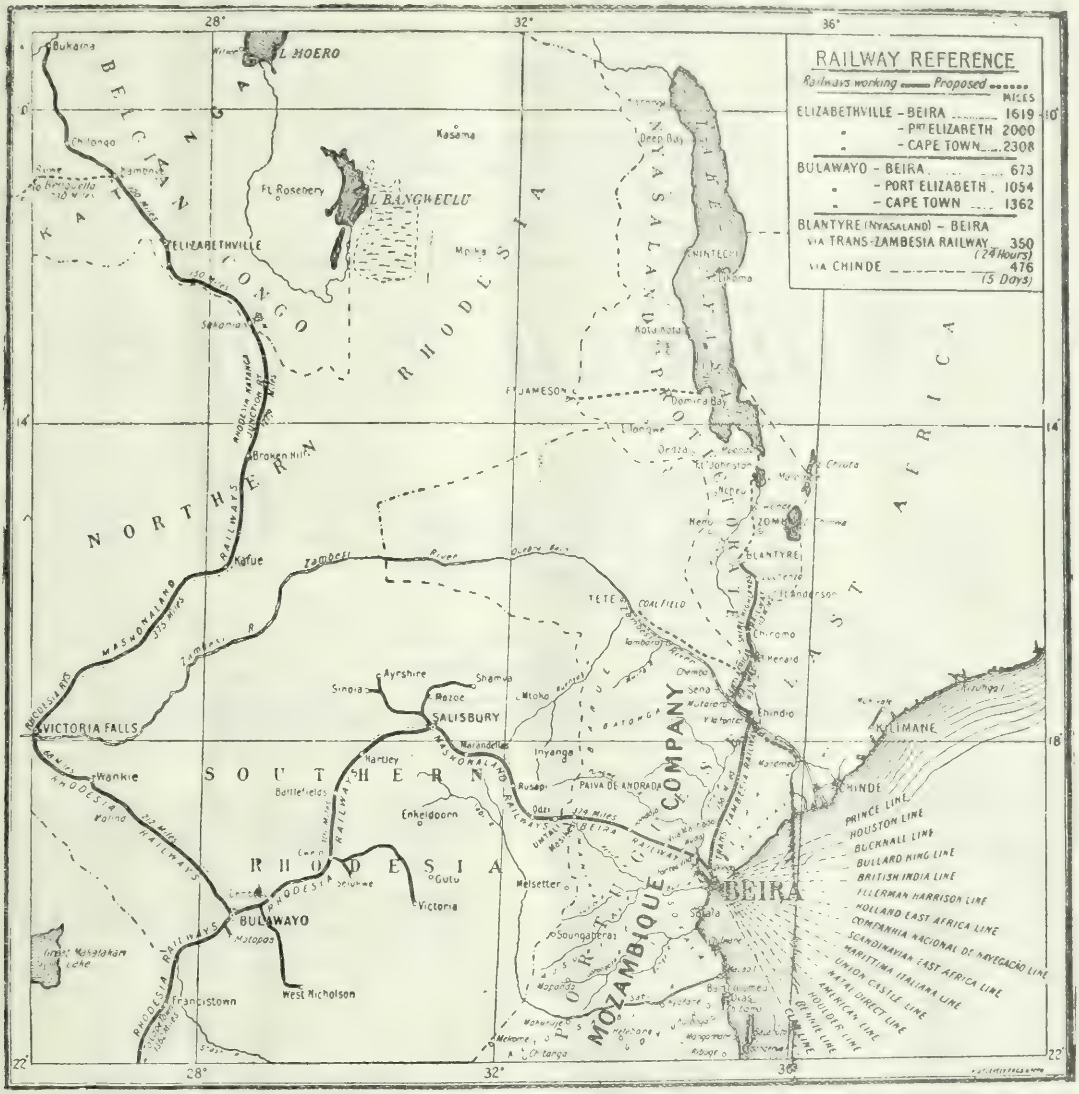


The following cable has been sent to the London office of this company: "Board of Directors announce that undermining rights of an area equal to approximately 491 mining claims on portions of farms Mooifontein No. 14 and Vierfontein No. 15 have been acquired from the Government."

Union Corporation, Limited.

The accounts for the year ended 31st December, 1922, show a realised net profit of £242,124, and, including £77,872 brought forward from 1921, there is an amount of £319,996 to be dealt with. The interim dividend of 8 per cent. (1s. per share) paid on the 2nd December last involved £70,000; the directors have decided to add £30,000 to the reserve account; and have declared a final dividend of 16 per cent. (2s. per share), making 24 per cent. (3s. per share) for the year, and leaving an amount of £79,996 to be carried forward.

Railway Development in East Africa.



This map shows what an important part Beira is now playing as the railway and shipping centre of the East Coast, and as the best outlet at present available for the mineral products of Rhodesia and the Great Congo copper fields.

Oils from Coal.

A message from Paris to the *Financial Times* says: "Professor Kling, Director of the Paris Municipal Chemical Laboratory, expresses his belief that science is within reach of solving the problem of transforming coal at the pit's mouth into hydro-carbonated liquids which, if brought to practical commercial point, will absolutely revolutionise the collieries industry and radically affect all other industries. Professor Kling does not claim that all the difficulties connected with the problem have been overcome, nor that the time has yet come to transform coal by the process into motor petrol as a profitable commercial proceeding, but he believes that the recent discoveries and experiments of such men as Dr. Fischer, Director General of the Kaiser Wilhelm Institute, of Mulheim, on the Ruhr, his assistant, Herr Schrader, and of other scientific chemists, make the solution of the problem a certainty within a reasonable period. The time is not far distant, according to Professor Kling, when we shall no longer waste the component parts of coal, as we now do by burning it in its crude state, but by the process of hydrogenation brought up to date we shall obtain light oils for motors, heavier oils for Diesel engines, as well as oils suitable for replacing mazout for heating boilers and numerous other uses. In a word, existing discoveries are sufficiently advanced to allow it to be foreseen that, apart from coke and gas and many sub-products of coal already used in chemical industries, the treatment of raw coal itself is destined to undergo a prodigious transformation."

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TOPICS OF THE WEEK.

The New Currency Bill.

After a protracted and most interesting debate, the Currency and Banking Act Amendment Bill has been read a second time and sent on to the Select Committee on Public Accounts. Despite some rather confused and heated criticism from the Labour and Nationalist benches, supported by no less redoubtable a force than Mr. Merriman, the Prime Minister and Sir Abe Bailey and Mr. Burton made out a good case for the Bill. Sir Abe Bailey made a very telling speech of obvious sincerity, and his views must carry great weight on the controversial questions at issue. Mr. Burton, indeed, found Sir Abe Bailey's support almost embarrassing in its enthusiasm in regard to the vexed question of inflation. The Prime Minister's speech, as reported, was perhaps too subtle to be convincing, and it was left to Mr. Burton to hammer home the plain facts of the case in blunt and unequivocal words. Mr. Burton's reply to the debate was, indeed, admirable. Finality is hard to reach in matters of this sort, but the Minister for Finance brushed aside the false issues raised and put the truth of the matter in a nutshell. And now the Bill has gone to the Select Committee stage, and further comment may be withheld until its reappearance therefrom, doubtless not without amendments.

The Chartered Company's Report.

In a report covering 43 closely-printed quarto pages, the Chartered Company tells the story of its proceedings during the two financial years ending March 31, 1921, and March 31, 1922. Mr. Rochfort Maguire is the new President, and it may be safely said that the company never had a stronger administration than it now has the good fortune to possess. The report first of all deals with political and constitutional matters, and recalls the voting for Responsible Government, at the recent election, which was 8,774 in its favour and 5,989 for consolidation with the Union of South Africa. The Imperial Government has, so far, made no sign with regard to constitutional changes in either Northern or Southern Rhodesia, but "it is evident that the end of the company's administration cannot now be long delayed." The Chartered Board promises friendship and co-operation with Southern Rhodesia, recognising that the fundamental interests of all concerned are identical. To secure economy of management, it has been decided to place all the Chartered commercial undertakings under one responsible head, and the office of general manager has been accepted by Major P. S. Inskipp, O.B.E., who has relinquished his seat on the Board and proceeded to South Africa to take up his duties. Coming to the mining industry, the mineral production from Southern Rhodesia for the year ended December 31, 1921, was £4,720,375, showing an increase of £269,387 as compared with the production for the previous year. The gold output amounted to 585,525 oz., valued at £3,217,275, or an increase of 33,027 oz. and £160,726 as compared with the previous year. For the year ended December 31, 1922, the mineral production was £4,474,584, or a decrease of £245,791 as compared with the previous year. The gold output was 652,792 oz., valued at £3,111,469, showing an increase of 67,267 oz., but a decrease of £105,806 in value due to the lower price realised for the gold. The total mineral output since 1890 has been in value: Gold £54,613,084, silver 3,296,024 oz., coal 6,079,648 tons, chrome 820,771 tons, copper 28,161 tons, and asbestos 90,598 tons. Towards the end of 1921 more attention was being given to prospecting and the reopening of claim ground. The bigger mines maintained their output; economies were effected and labour was satisfactory; but the gold premium made a difference in realisation. The search for gold mining properties is principally noticeable in the Bulawayo, Hartley and Gwelo districts. The production of silver in 1921 was 152,989 oz., and in 1922 172,209 oz., the net value in the latter year being £24,526. The copper output in 1922 was 3,388 tons, and the value £201,022. The Wankie colliery output in 1922 was 515,650, and the chrome production 93,474 tons, of a value of £302,888—a decrease over the previous year of £107,520. The value of the asbestos production in 1922 was £577,699, but this was a decrease on the previous year. Mica and arsenic are also produced in small quantities. During the year ended December 31, 1922, dividends amounting to £611,639 were declared by Rhodesian mining companies, and £256,801 by Rhodesian development and miscellaneous companies. The total cash dividends declared by Rhodesian mining companies to December 31, 1922, have amounted to £8,813,460, exclusive of those declared by Rhodesian development and miscellaneous companies in cash or scrip (which amounted to over £4,000,000), and exclusive also of dividends paid by local Rhodesian mining companies and syndicates and distributions effected by means of return of capital. The mineral output of Northern Rhodesia for 1922 was £348,482, and, from the commencement to the end of 1921, the total value of the mineral output from that territory has been £2,279,824. The gross approximate receipts of the Rhodesia, Mashonaland and Beira railways for 1922 were £2,792,000. The administration accounts of Southern Rhodesia show a surplus of £255,545 for the year ending March, 1922, which contrasts with a deficit of £32,223 for the year 1920 and a surplus of £72,111 for 1921. The Northern Rhodesia deficit in 1922 was £62,064, and the commercial accounts of the company show a revenue over expenditure of £105,253. The gross commercial revenue for 1922 was £449,928. The total amount advanced by the Imperial Government in connection with expenditure on military operations in Africa against the Germans has been £2,010,944. The company's resources in cash and first-class securities at the end of March, 1922, amounted to £1,890,000.

—And The Annual Meeting.

From the full report of the annual meeting of the Chartered Company, to hand by this mail, we learn that the Imperial Government, [illegible] [illegible] [illegible], is still [illegible] in putting the Chartered Company to as much trouble and delay as possible in obtaining a refund of a part of what it has spent on the administration of Southern Rhodesia. It [illegible], to all appearances, [illegible] to subject the Company's claims in respect of Southern Rhodesia to the same lengthy [illegible] of legal proceedings and consideration by various Commissions, which [illegible] so long [illegible] a settlement in respect of the southern province. Meanwhile, the Board and the management in Rhodesia are not allowing these [illegible] to [illegible] the progressive development of the company's big pastoral, commercial and agricultural undertakings, the profits of which will bring, without question, [illegible] to shareholders. While 1921 was a record year for [illegible] agricultural prosperity in the province, 1922 [illegible] suffering from two big misfortunes, drought and a heavy fall in cattle prices. [illegible] the [illegible] revenue [illegible] of the Chartered Company cannot be expected to be very brilliant. But, according to Sir Drummond Chaplin, the Administrator of Rhodesia, who delivered a [illegible] speech at the meeting, prospects for 1923 are much brighter. Both from the mining and agricultural points of view there are many features of encouragement in the outlook. Moreover, just across the border the Congo copper fields are largely increasing their output, and this will bring further great direct and indirect benefits to Rhodesia. Whether shareholders consider only the [illegible] of their mining royalties, or whether they [illegible] their [illegible] in their railway and other commercial interests, they have no reason, urged Mr. Maguire, the new President, to be alarmed about the future.

The Electricity Supply Commission.

Extraordinary interest attaches to the news from Capetown regarding the appointment of the Electricity Supply Commission, provided for under the Electricity Act passed by Parliament last year. So far, its functions have been [illegible] by the Board of officials appointed as a separate body under the Act to supervise the issue of licences [illegible] [illegible] as well as to the Commission, very completely on the lines adopted by the Transvaal some 15 years back. That Board consists of Sir R. N. Kotze, chairman, Dr. H. J. van der Bijl, technical adviser, and Mr. J. A. Vaughan, Chief Inspector of Machinery. The new Commission has been constituted as follows: Dr. H. J. van der Bijl, permanent chairman, Mr. Robert Niven, of Johannesburg, and Mr. J. [illegible] [illegible], retired mining engineer. The two latter will not be full-time members, but Dr. van der Bijl will have to give all his time to the work, and will therefore have to retire from the official position he at present occupies. The first meeting of the Commission will shortly be held, and the point to be remembered in connection with its work is that once established it will be independent of the Government, [illegible] on the same lines as the Rand Water Board and the Reserve Bank. It may appoint its own officials, raise its own revenue, and generally act as a separate corporate body. Among the first points to be considered are (1) the taking over from the South African Railways of the great power station in course of construction at Colenso. This station will serve primarily for the supply of current to the railway between Maritzburg and Ladysmith, which is to be electrified. One of the main purposes of the Act is to keep the supply of electricity in bulk separate from the running of our railways, as it is realised that it would be impossible to burden the railway system, huge as it is, [illegible] [illegible], with the [illegible] and responsibility of national electrical supply as well. (2) The erection of a power station at Durban. (3) The provision of electric power in the neighbourhood of the Selati Goldfields, Transvaal. (4) The erection of a power station at Witbank. It is understood that the Commission will be able to commence its work with a small Government advance for preliminary expenses, and that before long the revenue it is to earn will enable it to extend its undertakings and establish a sound financial basis for any loans it may decide to raise.

Union Budget Deficit.

Last week's *Government Gazette* contained the monthly statement of Exchequer receipts and issues, but they are not in the present case of much assistance in enabling an accurate forecast to be made of the deficit at the close of the financial year. Mr. Burton's revised estimate of the position was given in the House of Assembly just a month ago, and he then anticipated that the revenue for the twelve months would total £27,514,000, and that the expenditure would be in the neighbourhood of £28,414,000. The resultant deficit on these assumptions would be £900,000. But these estimates are rather difficult to bring into harmony with the returns published in the *Gazette*, which cover the eleven months ended February 28. At that date the position was as follows:

Revenue (11 months) ...	£24,235,140
Expenditure (11 months) ...	26,146,081
Deficit	£1,911,000

We have very little doubt that this deficit will be reduced in the current month by fully a million sterling, but it is of some interest to notice that both revenue and expenditure will have to be extraordinarily heavy during March if Mr. Burton's calculations are to be realised.

Union Finance.

A book has reached us entitled "An Analysis of the Finances of the Union of South Africa" (price 12s. 6d.), by Dr. M. H. de Kock, Senior Lecturer in Economics at the University of Capetown. The book arose from a study, prepared and presented in partial fulfilment of the requirements for the degree of Ph.D. in Economics at Harvard University which the author has added to his other scholastic honours. The Union Government placed all documentary and other facilities at the author's disposal and contributed £200 towards the cost of publication, the result being a substantial work, the well arranged and clearly presented material of which can be applied by political and other students in accordance with their own experience and convictions. Dr. Kock's book supplies the need which has been felt for a practical commentary upon the Act of Union as it has developed in operation, and the work will be of permanent value in the light it must throw upon South African financial-administrative practice for years to come. The author shows how the Union, by retrenchment and economy, grappled with the financial and trade problem caused by the outbreak of the Great War. That war caught South Africa in the act of spending money on development, as every young country was doing, the result being that the fiscal year 1914-15 closed with a deficit of £2,012,000, obviously caused by the economic upheaval and the suddenly increased public expenditure. The Union at once applied processes of economy and increased taxation, with the result that the year 1915-16 brought an administrative surplus of £397,918. Then, as we all remember, came the greatly enhanced cost of living, which affected the Union like all countries, and higher pay in the public services was only one of the resulting drains upon the community. The Union and its provincial services had soon spent about three millions in war bonuses alone. To the war must be attributed the fact that as between the years 1911-12 and 1919-20 the ordinary expenditure rose from eleven to twenty millions. The state of the revenue is sufficiently indicated by the fact that during the decade 1910-11 to 1919-20 the total net surplus of the Union was £5,951,210, setting the surpluses against any deficits. Of this amount the railways and harbours provided a net surplus of £1,474,741 and the provinces of £711,982. Here we seem to have a truer view of the financial and economic capacity of the country than can be obtained by examining only the past year or two, when the Union, like the Mother Country and every other nation which has escaped from the shackles of distinctly warlike expenditure, has been striving, in spite of the handicaps of international financial confusion, to build up anew the edifice of commercial and economic prosperity. In all the circumstances, and bearing in mind what has happened to other parts of the world, it is remarkable that the Union public debt increased during the decade mentioned by only about 50 per cent., going from £116,036,978 to £173,905,000. By March last it had risen to £191,784,936, an increase of 65 per cent. in twelve years. But, deducting the reproductive debt representing revenue-producing assets such as the railways, harbours, etc., the sinking fund and balance of loan account, the net debt of the Union was £56,224,924. Estimating the economic relation of the white to the coloured population at 1 to 4, Dr. Kock states the per capita debt of the Union in March last at £61, against £65 in Australia and £120 in New Zealand, these latter figures being for 1920, when the per capita public debt in England was £160, in France £150, and Germany £120, but, as he says, these last figures are due to the tremendous war expenditure of these countries. The Union's war expenditure from loan funds down to 1920 is put at £31,374,722.

Notes & News.

SPECIAL ANNOUNCEMENT.

FORTHCOMING SPECIAL CEMENT SUPPLEMENT.

On March 31st the "S.A. Mining and Engineering Journal" will publish a Special Supplement dealing with Cement Making and related industries in Southern Africa. This will form a complete review and record of the cement making industry of the Sub-Continent. A strong plea will be entered for the South African product generally vis à vis the imported article. The various cement making works will be described in detail with illustrations, and interesting statistics relating to the industry and articles regarding the latest development in cement making will be given. The supplement will be contained in the ordinary issue of the Journal, but in order to avoid disappointment extra orders for copies of the supplement and orders for advertising space also should be addressed to the offices of the Journal without delay. The issue will be on sale during the show week of the Witwatersrand Agricultural Society, and thus will provide a splendid advertising medium.

* * *

The Story of Coal.

On Saturday, the 24th March, at 8 p.m., 2,000 feet of film entitled "The Story of Coal" will be screened at the Scientific and Technical Club, 100 Fox Street, Johannesburg. Members and friends are cordially invited to attend.

* * *

Rooiberg Minerals Tin Mines, Ltd.

This company, which recently altered its capital, in view of the favourable advance in the price of the metal, has now decided to resume work under full factor conditions. Eight hundred natives were signed on in a week, and also a full complement of white men.

* * *

The English Electric Co., Ltd.

The English Electric Co., Ltd.—not the Eastern, as so many papers wrongly stated—have received cable advice from their London office to the effect that their company has secured an order for the first section of electrification of the Great Indian Peninsula Railways. This is the first step towards the electrification of railways in India.

* * *

Hopetown Alluvial Diggings.

We understand that reserved judgment has been delivered in the Cape Supreme Court in the interdict proceedings brought by the Government against Messrs. Pringle and Swiegers concerning the Klipfontein diamond diggings. An interdict was granted restraining the respondents from prospecting or digging for diamonds on the farm Klipfontein and from allowing any other persons to do so, other than those persons who at the date of the order were so doing, pending the decision in the counter-action already instituted by Pringle to prevent the Government proclaiming the farm as an alluvial digging.

Machine Tool Exhibition and Demonstration.

The South African General Electric Company, Ltd., announce an exhibition and demonstration of machine tools manufactured by the well-known firm of Alfred Herbert, Ltd., of Coventry, to be held at their premises G.E. Building, Marshall and Simmonds Street, Johannesburg, commencing the 16th April next. All interested are cordially invited.

* * *

The Mozambique—Union "Modus."

The jubilation over the statement by the Prime Minister last week regarding the agreement with Mozambique seems to have been premature, and commercial circles are vigorously protesting against the blow it will cause to the import trade through the eastern port. The Prime Minister has announced that the new Customs arrangement will not become operative before twelve months, but that is not regarded as a material concession. The matter remains under discussion.

* * *

Pig Iron and Steel.

Asked this week by Mr. Greenacre whether any producer had given notice to the Union Government that he intended to produce pig iron or steel as provided for under Section 2 of Act 11 of 1922, the Minister of Mines and Industries replied that the schedule of the Act would not come into operation till April, 1924. One intending producer had already applied for an advance under Section 1 of the Act. No representations had been made to the Government as to any difficulties arising out of the tonnage limitation laid down in the Act, and there did not appear to be any necessity for a reconsideration of this condition in the Act.

* * *

Enemy Property.

In the Assembly last week Senator Ehrlich asked the Minister for Finance: (a) Is the account of the Custodian of Enemy Property now closed, or are there still amounts to be collected and paid out, and when is this business likely to be finished off finally? (b) What is the total amount so far collected on behalf of enemy subjects, and how much more is likely to be collected? (c) What is the amount of Government Bonds, called Custodian Bonds, so far issued to enemy claimants? (d) Are all accounts duly examined and audited? The reply was: (a) The bulk of ex-enemy assets have now been liquidated, but there are from time to time new disclosures of small value. Arrangements are being made by which all claims from both sides must be lodged before the 31st December, 1924. It is hoped it will be possible to close the office shortly after that date. (b) Total assets as at 31st December, 1922, £13,582,962. (c) 1,692 certificates of credit for £2,110,161 have been issued. (d) Yes.

* * *

The Premier's Rhodesian Trip.

In the Senate last week Senator Whiteside asked the Prime Minister: (a) Whether the statements which appeared in the Press and attributed to him, to the effect that his trip to Rhodesia last year was non-political, are correct? (b) What are the names and status of the persons who accompanied him on that trip at the cost of the State? (c) What was the total cost of the trip to the State? (d) If the answer to (a) is in the affirmative, in what way was this expenditure on a non-political trip justified, in view of the serious statements of the Minister for Finance, at the same time deploring the grave condition of the public finances, coupled with the very grave shortfall in the railway revenue? The Minister replied: (a) At the invitation of the Rhodesia Administration, I visited Rhodesia and had an opportunity of meeting the people of Rhodesia and of seeing the country to which certain terms had been offered in the event of their deciding to enter the Union. (b) I was accompanied by the General Manager of Railways and certain other officials. (c and d) The cost was only £89 15s. 5d., which was due to the generosity of the Rhodesian Administration and the hospitality extended to me wherever I travelled. This expenditure was considered fully justified.

Tin and Tin Shares.

While all metals have been good moving recently, tin has stood out prominently. In 1921 it fluctuated between [illegible] per ton, while in 1922 the highest was £187 10s. and the lowest [illegible]. The recent sharp recovery has been [illegible] by speculative operations, but all the same there has been good trade buying from all quarters—America, the Continent and the Welsh tinplate makers. [illegible] like the [illegible] tin at about [illegible] per ton, but for [illegible] Nigerian companies the price has to be well over [illegible] to be payable, while the [illegible] would not [illegible] the present level [illegible].

* * *

"T.C.L." Activity.

The latest "T.C.L." report shows that some 77 town [illegible] were sold during 1922 and one farm, the latter consisting of [illegible] acres. At the close of the year the company had [illegible] on fixed deposit in South Africa, and [illegible] in British Treasury Bills, and arrangements were in progress for placing a further [illegible] on fixed deposit in London. The [illegible] Tin Company has been wound up, [illegible] the book value of the company's holding. [illegible] Work is proceeding on a restricted scale on this and some of the other mining properties. [illegible] produced 100 oz. gold [illegible] tons of ore, and [illegible] tons of tin concentrates came from the [illegible]. Agricultural and pastoral developments are [illegible] fairly well. Ex-enemy shares acquired from the [illegible] Custodian of Enemy Property to the number of [illegible], it is proposed to cancel. There are [illegible] up to £30,000 in respect of first and second [illegible] at 7s. 6d. per share.

* * *

The University and the Engineer.

In his address to the congregation of the University of the Witwatersrand last Saturday, the vice-chancellor, Sir [illegible], referred to the fact that the Witwatersrand University had developed out of a technical institute, of which the primary object was the training of engineers and [illegible] of mining, mechanical and electrical engineers. It was perhaps [illegible] fitting that the first vice-chancellor of the University should, in his person, be an engineer. In addition to a thorough knowledge of the fundamental subjects, it was essential that an engineer should express himself [illegible] and grammatically in his own language. An engineer, besides being [illegible] trained, should be a [illegible] of civilisation and be possessed of the culture [illegible] which every university desired to [illegible]. It would be of advantage to the State [illegible] of the engineer were to take a greater part in public affairs. After [illegible], Sir Robert pointed out the evils of [illegible] caused by science without [illegible]. "The present danger to civilisation," he added, "arises not, as in ancient days, from the barbarism beyond our borders, but from the barbarism in our midst and [illegible] rather than the uneducated."

* * *

No Gold in Vrede District.

It is officially stated that there is no gold in the Vrede district of the Orange Free State, as announced in a recent message from that centre. Mr. [illegible], Inspector of Mines, informed a representative of *The Friend* that [illegible], where the discovery of gold was said to have been made, was visited by Dr. [illegible], Director of the Geological Survey, and an Inspector of Mines from Germiston. Assays were made by them of the ground believed to be rich in gold and they revealed no trace of that metal. It is believed that there must have been some mistake, and it is thought desirable that prospective diggers in the area concerned should not spend money on a fruitless visit. The Department is anxious not to allow any unnecessary boom to take place, in view of the fact that it has been definitely ascertained that there is no trace of gold even where the actual spots pointed out to the experts by the prospector were examined.

* * *

What the Witwatersrand Gold Mines Pay Out in Costs and Taxation.

The last Report issued by the Department of Mines and Industries of the Government of the Union of South Africa, amongst numerous other very informative statistics, contains a table showing the chief heads under which the Witwatersrand mines contracted expenditure during 1921—the latest year for which detailed figures are available. The Report states:—

The following figures indicate the large increase in the percentage of the value of the output of Witwatersrand gold mines which is expended on salaries, wages, and stores in recent years.

Year.	Value of Gold Produced.	Expended on Salaries and Wages.	Expended on Stores.	Total Expended on Salaries, Wages and Stores.	Percentage of Value of Gold Produced.
	£	£	£	£	%
1912 ...	36,909,200	13,557,340	9,753,751	23,311,091	63.2
1913	35,628,828	12,877,762	10,128,800	23,006,562	64.6
1914 ...	34,064,603	11,939,804	9,806,480	21,746,284	63.8
1915 ...	37,200,963	13,013,452	10,434,963	23,448,415	63.0
1916 ...	38,058,008	13,732,483	11,787,597	25,520,080	67.1
1917	36,935,139	13,613,571	12,189,128	25,802,699	69.9
1918 ...	34,776,014	14,061,293	12,569,906	26,631,199	76.6
1919 (including premium)...	38,168,826	14,569,860	12,740,174	27,310,034	71.6
1920 (including premium)...	44,407,544	16,876,142	13,814,659	30,690,801	69.1
1921 (including premium)...	41,998,399	16,122,430	13,940,188	30,062,618	71.6

CROWN DIAMONDS.

Latest reports from the Crown Diamond Mine are most satisfactory, and we learn that every effort is being concentrated on completing the erection of the new treatment plant and hastening the start of productive operations on a scale commensurate with the value and capacity of the mine.

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The Week in the Sharemarket.

STEADY BUT QUIET—IMPROVING TENDENCY—DIAMONDS AND BASE METALS BRIGHTER.

A little more activity characterised the market this week, and generally stocks showed improved quotations. As the week progressed, however, business fell off, and it may at time of writing be described as steady, but quiet. Diamonds and base metals are a little brighter, but here also activity is restrained. Next week will be a holiday week, and it may be that things will not perceptibly improve till after Easter. Meanwhile the outlook is promising and the undertone quite healthy.

	Fri. 16th.	Sat. 17th	Mon. 19th.	Tues. 20th.	Wed. 21st	Thurs. 22nd.
Anglo Am. Corp.	25 6	26 0	26 0	26 3	26 0*	26 0
Apex Mines	6 0*	6 0*	6 3*	6 0*	6 3*	6 0*
Aurora Wests	6 3†	—	6 3†	—	6 3†	5 0*
Brakpan Mines	66 6*	68 6	6 9	69 6	70 0†	68 0
Bushveld Tins	0 3*	0 4*	0 3*		0 3*	0 4*
Cinderella Cons.	—	3 7*	3 9	3 7*	3 9	3 6*
City and Subs.	2 10*	2 10*	2 10*	3 0†	2 0*	—
City Deeps	47 9*	47 6*	47 3*	48 0*	47 9*	47 9*
Clydesdale Colls.	—	17 6†	17 6†	17 6†	17 6†	17 6†
Con. Diamonds	22 4½	22 9	22 10*	11 10½	22 10½	22 9*
Con. Investments				—		29 0*
Con. Langlaagtes	10 0*	13 0*	12 2*	13 0*	13 9	13 6*
Con. Main Reefs		11 3*	11 3*	11 9†	11 3	11 3*
Coronation Freeholds			0 6*	0 8*		0 6*
Do. Syndicates	7 4½	7 6	7 6	7 7	7 6*	7 10
Crown Diamonds	6 5	6 7	6 9	6 11	6 9	6 10
Crown Mines	52 0	52 3	54 6	55 6	55 6	55 0
Daggafontein Mines	3 4*	3 4*	3 4	3 4	3 3*	3 4*
East Rand Coals	1 6†	1 4*	1 5*	1 0*	1 5*	1 4*
East Rand Deeps		0 8†	0 8†		0 8*	0 8*
East Rand Minings	10 0*	10 0*	10 6*		10 0*	—
East Rand Props.	7 6	7 0	7 2*	7 6*	—	7 4*
Eastern Golds	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Ferreira Deeps	7 3*	8 0†	7 3*	7 3*	7 3*	7 3*
Frank Smith Dmds.	4 0*	4 3	4 3	4 1*	4 1	4 2
Geduld Deeps	61 0	61 6*	62 0	61 9*	62 0*	62 0
Glynn's Lydenburgs	13 6*	13 0*	13 6*	13 6*	13 6*	—
Govt. Areas	104 6	104 0*	104 0	104 0	103 9	104 0
Hume Pipes	—	—	—	8 3*	8 6	8 4*
Knight Centrals	5 0	5 1	5 1*	5 2	5 1*	5 2*
Lace Props.	9 3*	9 3*	9 3*	9 3*	9 0*	9 0
Langlaagte Est.	20 0*	20 3*	20 3*	20 0*	20 0*	20 0*
Leeuwpoort Tins	5 6†	4 9*	4 10	4 10	4 11	4 11
Luipaardsvlei Est.				3 6*	—	—
Lydenburg Farms	3 6†	3 3*	3 3*	3 3*	3 4	
Middelvlei Est.		2 0†	1 3*	1 3*	1 6*	1 6*
Modder B.'s	26 6	26 6	26 6	26 9	27 0	26 9*
Modder Deeps	13 3	43 9	43 3	43 6*	43 6	43 9
Modder Easts	8 6*	8 6	8 6	8 3*	8 4*	8 3*
Natal Navig. Colls.	27 0*	—	27 0*	27 0*	—	27 3
National Banks		—	—	—	180 0	18 0*
New Eland Dmds.	45 0*	45 0*	45 0*	44 6*	45 0	44 6*
New Era Cons.	7 3†	6 9*	6 9*	7 3*		6 9*
New Geduld Deeps	2 0*	1 9*	1 9*	2 0*	2 0*	2 0*
New Kleinfonteins	5 6	5 3*	5 0*	5 0*	5 0*	5 6
New Modders	78 0	78 3*	78 6	78 0	78 0	78 0
New Primrose	—	3 6*	—	3 6*	—	—
New Unifieds	2 3*	—	2 0*			—
New State Areas	39 0	38 9*	39 3	40 0	40 3	40 6
Nigels	8 0*	8 0*	7 0*	7 0*	7 0*	7 0*
Nourse Mines	15 6	15 6	15 6	15 6*	15 7	15 7½
Pretoria Cements	42 0*	42 3*	42 3*	42 6*	42 6*	42 0
Rand Collieries	1 8†	1 8†	1 8†	1 8	1 6*	1 8†
Rand Nucleus	0 10*	0 10*	0 10*	0 10*	0 10*	0 10*
Randftn. Central	—	14 9*	15 0	15 6	16 0†	15 0*
Do. Estates	23 1½	23 3	23 6	23 10½	23 10	23 9
Rouxville Dmds.	1 3	1 5	1 3*	1 3*	1 5†	1 4*
Robinson Deep "A"	31 6	31 6*	31 9*	31 9*	32 0	31 9*
Robinson Deep "B"	12 6†	11 6*	11 3*	11 6*	12 3	12 3*
Rooibergs	4 9*	4 6*	4 6*	4 0*	—	
Ryan Nigels	—	3 0*		3 0*	3 0*	—
Rose Deeps	—	13 0†		—		
Simmer and Jacks	3 3	3 6	3 6	3 6	3 5*	3 4
S.A. Breweries	28 6*		28 0*	—		28 6
S.A. Lands	5 6*	5 5*	5 6*	5 6*		5 4*
S.A. Reserve Bank	£140	£138†	£137	—	£131*	£133*
Springs Mines	48 3*	48 6*	48 6	49 0*	49 6	49 0
Sub-Nigels	10 9	10 0*	11 0	10 0	9 9*	9 9
S.A. Alkali	16 3*	16 9	16 9	15 6	15 3*	16 6
S.A. Townships	10 0*	10 6*	9 9*	10 0	10 0*	9 9*
Transvaal Lands	16 9†	—	—	17 0†		17 0†
Trans. G.M. Est.	8 9	9 0†	—	8 9*	8 9*	8 9*
Transvaal Silvers	14 0*	14 6	13 3	15 0*	13 6*	14 3*
Tudors	0 3*	0 0†	0 3*	0 3*	0 3*	0 3*
Union 5 per cent	£104	£103	£103	£103*	£103*	£103
Van Dyks	—	—	1 8†	1 8*	1 4*	1 6
Van Ryn Deeps	70 0*	70 0*	69 9	69 6*	69 9*	69 6*
Village Deeps	13 9		13 6*	14 0	13 9	13 6*
West Springs	18 7½	19 4	19 7½	19 4	19 4	19 3
West Rand Cons.		7 0†		6 3*	7 0†	6 6
Western Rand Est.	4 0†	4 0*	3 11	3 9*	3 10*	3 9*
Witbank Colls.	29 6*	29 6*	29 6*	29 6*	29 6*	29 0
Witwatersrands	16 0*	16 0*		16 0*	16 0*	15 9
Wit. Deeps	16 3	16 0	16 0	16 0*	16 6*	16 7*
Zaaiplaats Tins	3 9	3 6*	3 11	3 6*	3 9	3 8

* Buyers. † Sellers.

The Bessemer Gold Medal.

The Council of the Iron and Steel Institute has awarded the Bessemer Gold Medal for this year to Dr. W. H. Maw, LL.D., joint editor of our contemporary *Engineering*. Dr Maw is now eighty five years old, and has been a member of the Iron and Steel Institute for the past forty nine years. He is the present President of the Institution of Civil Engineers, and is a past president of the Institution of Mechanical Engineers and of the Royal Aeronautical Society.

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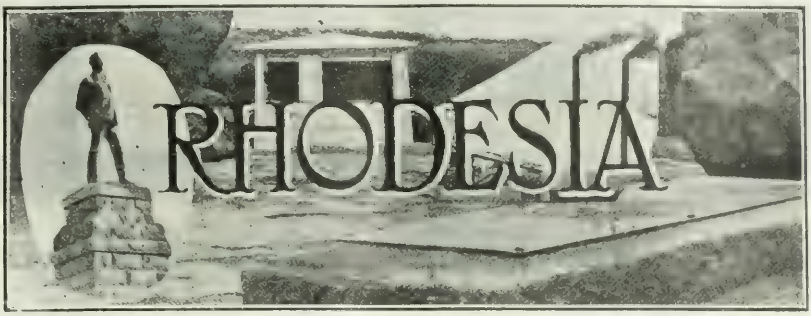

A Rhodesian Flotation.

A new Rhodesian mining company, called the Newtonfontein Associated Mines, is announced. The capital is £60,000, in 60,000 shares of £1 each. The provisional directors are: Ernest Charles Baxter (Chairman), William Kendall (Managing Director), William Joseph Atterbury, O.B.E., James Forbes, Percy Kent, Donald McDougall, and Robert Miller Nairn. Consulting Engineer: F. P. Mennell, F.G.S., M.I.M.M.

This company is being formed to acquire, develop, work and dispose of mining and other properties, acquire concessions, promote companies, carry on metallurgical operations and any business which may seem calculated to benefit the shareholders, and more especially, in the first instance, to purchase six blocks of gold-bearing claims in the Bembesi district, known as the "K. & B." Claims, registered numbers 17653, 17511, 17819, 17820, 17844 and 17905, with the machinery and plant thereon; and six blocks of gold-bearing claims, also in the Bembesi district, known as the "Newtonfontein," "Ettie" and "Copperfontein," registered numbers 16553, 16718, 16856, 16900, 14232 and 17059, from Mr. William Kendall and the Bembesi District Gold Mines, Ltd., for 50,000 fully paid shares in accordance with contract dated 12th March, 1923. The first three outputs from the "K. & B." claims, viz., for December, 1922, and January and February, 1923, are valued at upwards of £3,000. An agreement was entered into between Messrs. Kendall and Burke (the then owners of the "K. & B." claims) and the Rhodesia Gold Mining & Investment Co., Ltd., on 9th December, 1922, whereby the latter party acquired the option of purchasing the "K. & B." claims within twelve months for the sum of £35,000; but the former retained the right to continue to crush for their own benefit, until such option was exercised, all the development work which may be brought to the surface by the option holders. Messrs. Kendall and Burke's rights under this agreement are being transferred to the Newtonfontein Associated Mines, Ltd. Whilst the "Newtonfontein" claims were worked during 1917-1919 by their former owner, Mr. Newton, 8,879 tons of ore yielded 8,198 ozs., valued at £34,187. During 1920-1922 the Bembesi District Gold Mines, Ltd., crushed therefrom 2,702 tons, yielding 1,021 ozs., valued at £5,330, and then closed the mine down temporarily. The prospecting work done on these claims at intervals since then has disclosed the presence of gold in several reefs, and it is expected that crushing will be recommenced shortly. Recent development work for "protection" purposes on the "Ettie" claims has resulted in the discovery of visible gold in a reef which appears to run into the adjoining "Copperfontein" claims. It is proposed to do further work on these blocks forthwith.

Gaika Gold Mining Co.

A cable to London gives the latest developments as follows: "North section, No. 5 level: Rise 470 ft. north, last 65 ft. average 9¼ dwt. over 36 in. North section, No. 6 level: Cross-cut west from south face, drive south at 20 ft. is now in 150 ft., last 95 ft. average 7 dwt. over 44 in. North section, No. 6 level: Winze on Rubble reef at 300 ft. south is now in 10 ft., last 10 ft. average 18½ dwt. over 50 in. North section, No. 7 level: Cross-cut west at 390 ft. south, drive south at 40 ft. is now in 100 ft., last 90 ft. average 8 dwt. over 54 in. South section, No. 3 level: Winze at 405 ft. north is now in 20 ft., last 10 ft. average 17 dwt. over 36 in. South section, No. 4 level: Winze at 15 ft. north of cross-cut east at 512 ft. north is now 35 ft., last 35 ft. average 5¼ dwt. over 42 in. South section, No. 5 level: Winze at 45 ft. in cross-cut 70 ft. north is now in 35 ft., last 35 ft. average 7½ dwt. over 43 in."

In the recent circular figures were given as cabled, but in the mail just received the manager remarks: "The payable ore reserve figures cabled represent an increased tonnage at lower grade than the previous estimate, most of the additions being comparatively low grade. Although a considerable amount of development work has been done in payable values during the quarter (ending December 31), the addition of new blocks is comparatively small this quarter, as in several important cases ore bodies opened up have not yet been located with certainty above and below, and the absence of vertical workings makes it impossible to estimate ore reserves. As soon as winzes and rises have been put through from these workings, I hope it will be possible to add considerably to our ore reserves. No Rubble reef is included in reserves below No. 6 level at present. It is unfortunate that No. 6 drive south on the Rubble reef happens to be just at the level of a faulted zone, as this has the effect of considerably reducing the estimated grade of what will probably prove to be high grade blocks of ore when stoped."

The heavy development work being done produces a quantity of low grade ore, and as the additional cost of putting it through the mill will leave a margin of profit, the manager recently suggested that to obtain the most economical results this low grade ore should be put through the mill. It will probably amount to about 25 per cent. of our tonnage, and will consequently probably reduce our profit for the current quarter, and quite likely the following quarter. The board is working for the current year more with a view to development than profits, which will explain its acquiescence in the manager's suggestion.

ENGINEERING SECTION.

Electrification of Chilian State Railways.

AN ACCOUNT OF A PROJECT WHERE CONDITIONS ARE PARALLEL WITH THOSE OF SOUTH AFRICA.

Last year a contract for the electrification of the first [illegible] placed in the United States, being awarded to the Westinghouse Electric and Manufacturing Company, in conjunction with the firm of Errazuriz, Simpson and Co. This contract covers line equipment for 144 miles, thirty-nine locomotives and three sub-stations at a cost of about £1,400,000. Current will be obtained from the existing hydro-electric plants.

Two main results are expected to be accomplished by the change on a line which has severe working conditions: first, an increase of capacity on the existing trackage by permitting heavier trains, faster runs and a more frequent service; secondly, a material reduction in working expenses by reducing the expenses for fuel, engine and train crews, coaling and water supplies, maintenance of locomotives and maintenance of permanent way.

On the lines included in the first stage for electrification it was necessary, at the time of the coal shortage in 1917, to work an excessive number of relatively light trains. This resulted in a congestion of traffic that nearly approached the working capacity of the lines. This condition was relieved later, however, by the introduction of more powerful goods engines of the 4-8-2 type. With electric traction the present capacity of the lines will be nearly doubled.

To increase the capacity, if steam locomotives were continued, would require engines so much heavier than those now in use that probably heavier rails would have to be laid at considerable expense, and the cost of maintenance of way would be increased. For electric working it is claimed that much greater tonnage may be handled on the present track owing to the reduced stresses in track, while it will also enable the number of trains and train tonnage to be increased. Furthermore, for a given tonnage handled the cost of track maintenance will be less with electric than with steam working.

The first stage of electrification comprises the 116-mile main line between Valparaiso and Santiago and the 28-mile branch to Los Andes, which is the terminus of the Transandine Railway. From Valparaiso the line passes through the residential district of Viña del Mar, and after crossing the low coast range it follows the fertile valley of the Aconcagua River to Las Vegas. At Calera there is a junction with the Longitudinal Railway running north to Antoragasta and Iquique. At Llaillay, about halfway between Valparaiso and Santiago, the mountain gradients begin and this point is the starting station for all main line passenger trains making connection with trains on the Los Andes branch beginning at Las Vegas. On the eastern side of the range the heavy gradients extend to [illegible].

The line is double for 56½ miles, as follows:—From Valparaiso to Limache, 27 miles; Ocoa and Llai-Llai, 8 miles, and [illegible] and Mapocho, 11 miles. Most of the main line is laid with 80 lb. flange rails, but 85 lb. rails are laid from Llai Llai to La Cumbre and from Calera to Ocoa. The Los Andes branch has 75 lb. rails. Native oak sleepers in stone ballast are used on the greater part of the line.

The heaviest gradient is 2·25 per cent., or 1 in 44, for nearly 12 miles between Las Vegas and the summit at La Cumbre, which has an elevation of 2,600 ft. above sea level. On the eastern slope of the range the heaviest gradient is 1·81 per cent., or 1 in 55. Banking engines for goods trains are required at several points and for passenger trains on the Tabon gradient up to La Cumbre. With electric working, bank engines will be required only for heavy goods trains on the Tabon gradient. The curvature is extensive and severe, and is largely concentrated on the heavy gradients. The sharpest curves are of about 530 ft. radius.

Of six tunnels, three are on the Tabon incline, and the longest—at San Pedro—is 1,600ft. in length. This tunnel is rather wet, but the others are dry, so that there will be no serious corrosion of the overhead wiring. There is sufficient headroom above the rails to make the design of the wiring and locomotive equipment an easy matter. An advantage to passengers and train crews will be the elimination of the present smoke nuisance in the tunnels. The Las Cucharas double-line 440ft. steel cantilever bridge over the Estero near Salto is the largest structure on the line, but there are numerous plate girder bridges.

The present contract provides for thirty-nine engines, as follows: Six 127-ton express passenger engines, 2-6-0-0-6-2; eleven 80-ton local passenger engines, 0-4-0-0-4-0; fifteen 113-ton goods engines, 0-6-0-0-6-0, and seven 65-ton shunting engines, each carried on two four-wheel bogies with all axles motor-driven.

Passenger Engines.—Express trains between Valparaiso and Santiago consist usually of six to ten carriages, making a load of 200 to 300 gross tons behind the tender. Sometimes there are fifteen or sixteen carriages, in which case bank engines are used on the Tabon incline. The electric express locomotives will be able to handle the heavy trains without the aid of bank engines. Their nominal rating is 2,250 horse power, corresponding to a tractive effort of 23,400 lb. at a speed of 37 miles per hour. The maximum speed capacity is 62½ miles per hour. With a total weight of 127 tons there will be 105 tons on the drivers. The wheel arrangement consists of two groups of three driving axles, with a two-wheeled bogie at the outer end of each group. The frames of the driving wheel groups will be connected by a draw bar and fitted with spring buffers.

Six motors of 375 horse-power—of the field-control type and with forced ventilation—dirve the axles through flexible spur gears. Three-speed combinations are provided. For the lower speeds all six motors will be connected in series, giving up to 33 per cent. of maximum speed. For medium speeds, up to 66 per cent., three motors will be connected in series, and the two groups will be connected in parallel across the line. For full speed, three groups of two motors connected in series will operate a full line potential.

(To be continued.)

More About the Grain Elevators.

IMPARTIAL INQUIRY DEMANDED—DURBAN PUBLIC PERTURBED.

The *Natal Mercury* publishes the following significant article on the grain elevator question. It says: "Mr. Jagger's exceedingly cautious statement on the Durban grain elevator contains but little comfort for those who look to see this feature of the equipment of the port in operation at an early date. He evidently views the present attempt to sink concrete cylinders in order to provide foundations of the working-house in the light of a gamble with the forces of Nature, for he wound up his statement with the expression of opinion 'that if another half-dozen cylinders' (in addition to the two which are at present being sunk) 'can be dealt with in the same way, there will be reasonable ground for sharing the view of the contractor and engineers that the difficulties will be successfully overcome.' Thus for the present Mr. Jagger is not going to count upon success, and he bears out the view frequently expressed locally that the chances that the grain elevator will be completed on the site upon which work has been proceeding for some time past are by no means rosy. We hope that the optimism expressed by the contractor and some, if not all, of the engineers will prove fully justified; but, like the Minister of Railways, we feel that any promise of the success must at present be very conditional. The difficulties existing in connection with the construction of a building which, with its contents, will aggregate many thousand tons on such a site must naturally be very great. They are sufficiently obvious even to the layman. The site consists entirely of reclaimed land; it lies in the line of the natural drainage of a part of the Berea; and there is reason to believe that beneath lies the bed of a river which at one time flowed into the Bay. The site, though admirable from a transportation point of view, is not naturally suitable to bear the great weight it is sought to impose upon it, and stringent tests were necessary as to the feasibility of the proposal before the heavy expenditure involved was embarked upon. Unfortunately, the tests made by boring and pile-driving were insufficient, or at all events they provided misleading data, for each section of the work which has so far been carried out has been attended by delay, and has brought to light fresh problems which were not anticipated when the work was started. Judging from facts related by Mr. Jagger, the root cause of the trouble would appear to be that the preliminary tests carried out were restricted to the area which had been selected for the erection of the storage annex or bins, as it was not considered feasible to make such tests on the working-house site until the excavations had been carried to a lower level. It was evidently desired to press on with the work, and the results secured from the bores on the storage site, 'which were regarded as satisfactory,' were taken as being representative of the whole area. Mr. Jagger did not say whether subsequent investigations showed this to be so or not, but apparently this assumption was not founded on fact, for, whilst the foundations of the storage site when completed appeared satisfactory, it became apparent almost immediately after the pile-driving on the working site was finished that these piles did not provide a suitable foundation, and that further strengthening work would be required if they were to carry the heavy weights which were to be imposed upon them. The engineers were unable to agree as to the nature of the additional works required until Mr. Menkins came forward with a proposal to reconstruct them by sinking ninety cylinders to the rock below. This proposal, involving an additional expenditure of £105,000, was agreed to, and the work is now slowly proceeding. Shortly after this was taken in hand, however, the foundations of the storage site commenced to sink, whilst the greatest possible difficulty was found in driving down the concrete cylinders, for the excavations made for this purpose led to a great inrush of earth from the surrounding land. It was this phase of the trouble which was characterised by Mr. Jagger as the most serious of all, which led to the recent consultations of the experts on the spot. Certain recommendations were made, though apparently not with unanimity. The work is now proceeding on the lines of these recommendations, and this led Mr. Jagger to express the very cautiously worded hope that the difficulties had been overcome. Is the Government or the House justified in leaving the matter as it is? The work has now proceeded so far that there is every reason for carrying on on the lines indicated in the hope that a satisfactory foundation may be finally secured, but there is also reason for asking why it is that some of the difficulties which have been met with were not foreseen or ascertained in advance. The Minister's statement shows that the preliminary work, such as the sinking of trial borings and of test piles, was incompletely carried out, for owing to the reasons given no such tests were made on the working-house site, which has been the chief cause of the trouble. To this omission must be assigned the ill luck which has so attended the venture. But it is impossible to ignore that rumour has been busy in alleging that there have been other errors of judgment, which the various expedients adopted from time to time served to hide. The questions raised are in many respects highly technical, and there are many points upon which only a qualified man can express a competent opinion. But the matter is so important, the amount which has been expended is so large, and public interest has been so intrigued by the cloud of mystery which almost from the first hung over the operations that the call for an inquiry seems to be fully justified. It is quite possible that a sequence of misfortunes, of happenings which could not be reasonably foreseen, has dogged the Department in connection with the erection of the elevator; but unless Mr. Jagger sees his way to make a more detailed statement than that which he submitted on Monday, we think that the Durban members, who must be aware of local discussions on the subject, should press for an impartial inquiry into the procedure adopted in connection with the erection of the elevator, and the causes of the mishaps which have so far attended the work."

MINING AT MESSINA.

Nine thousand tons of ore were hauled and treated in the mill at Messina, says the Pietersburg paper. Some of this was smelted into "blister" copper of a purity of over 99 per cent. About six truck loads are awaiting shipment. The first shipment is expected to be sent off in a few days' time, to the United Kingdom. The second furnace is now in commission, and No. 3 refining furnace is being prepared. No. 3 is intended to produce ingots of a purity of 99·5 suitable for home consumption, but, in the first instance, will serve to increase the supply of blister of No. 2. The coal pulverising plant, which supplies fuel to the furnaces, is working satisfactorily, but the most economical kind of coal has not yet been decided upon.

DESIGNS —— DRAWINGS —— TRACINGS

Working Drawings made from clients' sketches and instructions; mechanical and structural work handled for inspection or supervision; drawings prepared for patent specification.

J. E. PARKER, M.I.Mech.E., M.A.I.M.E.,
'Phone 1766. Box 759, Pretoria.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET—IRON AND STEEL CONDITIONS HERE AND ELSEWHERE—TIMBER AND BUILDING MATERIALS—BRITISH TRADE RETURNS: JANUARY AND FEBRUARY, 1923—NEW CAPITAL FOR NEW STATE AREAS—COAL—TORBANITE—TENDERS RECENTLY RECOMMENDED BY TOWN COUNCIL—METAL MARKET QUOTATIONS.

General.

[illegible] within narrow limits, [illegible] of European affairs. It is [illegible] at the moment to [illegible] in the big [illegible] the Franco-German situation. Commercial people [illegible] that there is little [illegible] of the Union [illegible] warrant until [illegible] have been arrived at between Germany and France, and [illegible] of necessity [illegible] Allies, in regard to the great reparations question. [illegible] generally allowed, preclude any forward movement in the commercial world. Just for the moment the position may be summed up in the statement that we [illegible] conditions of the kind [illegible] From day to day we are groping in the dark, and [illegible] with as much patience as we can [illegible] constructive policy [illegible] by the [illegible] good and bad in the future. One can [illegible] that the respective Governments are biding their time [illegible] action which might [illegible] existing conditions. As far as Britain is concerned, there appears to be [illegible] to break the present friendly relations with France, in spite of the latter's action in the Ruhr, so long as the French policy is likely to result in peace [illegible] being restored. But it is felt that it would be altogether a different matter if French policy were persisted in to such an extent as to [illegible] for the future [illegible] in Europe. Then it might well be that Britain would find it necessary to state her mind freely on [illegible] and she will do everything possible to prevent such a happening. [illegible] Entente, but [illegible] It is hoped here that the recent reports [illegible] that Germany is prepared to settle with the Allies on the basis of [illegible] in respect of her obligations—although insufficient [illegible] Sir John Bradbury's report [illegible] will pave the way to a settlement. [illegible] in the mining trade. There is a general [illegible] get a glimpse of [illegible] movement [illegible] day for us. There is a great need for [illegible] and enable us to see a brighter picture than that presented to us to-day. We all know that a good time is coming, but just at the moment its appearance is not on the horizon. Prices at Home in iron and steel goods, especially in the heavy descriptions, have advanced quite a lot. Of course this advance has been reflected here in these particular lines. The mines are continuing to buy adequately to their requirements. The big mining strike in Wales, with its potentialities, coupled with the [illegible] building strike, is not at all conducive to long views on the part of the commercial community here. It is gratifying to note that a reduction of passenger fares between Europe and South Africa has been instituted by the German lines, to be followed, it is hoped at an early date, by the Union-Castle Line. Commercial circles are looking forward with interest to the opening of the Rand Agricultural Show here next week.

Iron and Steel.

A leading iron and steel importer called upon this week stated that he had just received a cable from Home announcing the advance of steel plates to £9 15s., and angles to £9 15s. basis. Another important mining material merchant when visited had just received a cable from America which he thought was very significant: "Early advance in all steel goods and greater delay in deliveries practically certain; all heavy steel plates and steel goods withdrawn altogether." He had this confirmed by a large American importing house, and that there was no possibility of prices coming down—for the present at all events. This authority stated that, compared with even as late as one month ago, the difference in prices to-day is about 9 per cent. advance in steel goods. British manufacturers have also advanced their prices by £1 15s. a ton this month, and all deliveries are delayed as well, as they are all pretty well booked up; in fact a cable received by him stated that "Mills fully booked up to May." He thought it was a pity that, despite forecasts months ago, the mines had not laid in stocks at the then low prices, as the present hand-to-mouth purchasing policy will now mean having to pay replacement cost of goods, which already means about 10 per cent. more as compared with a month ago. Goods from Germany, he said, were non-existent to-day. The S.A. Railways have recently called for tenders and placed orders for 1,000 tons of steel plates, and for copper tubes and copper piping for their annual requirements.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s., cheques plates, 27s. 100; lb.; imported flats, ½ x 3-16, ⅝ x ¼, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and

¾ in., 1s. lb.; ⅞, 1 up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ¾ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ¼, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5/16, 2s. 9d.; ⅜, 7/16, ½ and 9/16, 2s. 3d. lb.; ¾ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. lb.; phosphor tin, 2s. 9d. lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 32s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 7s. 6d. to 39s. 9d. each; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 21s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Present Conditions in British Iron and Steel Goods.

Through the courtesy of a leading importer of iron and steel materials, we are enabled to quote the following report of his London correspondents on the position in Europe at the end of February:—Our market generally is very strong, and steel prices particularly are soaring. The position of the Continent is getting worse day by day, and for some time back as few orders as possible have been placed in Germany. To-day the unfortunate position is of having orders but being unable to get them out of the country because of the restrictions placed on the works regarding forwarding by the French military authorities. This week buyers forward seem to be thoroughly scared, and orders have been placed for all sorts of steel products in this country and in America, with the result that higher prices are ruling. America has not much to spare for export, and Canada also is well booked, and the principal works there have had the misfortune to have a steel strike, which, while it only lasted about two weeks, threw them in arrears as regards output for a month. There is no saying what prices will go to now, and even if the French and Germans settled their differences to-morrow it would be some weeks—probably some months—before we got back to normality, with little chance of prices coming down to any extent for even a long period. Take, for example, two Continental steel works. They quoted this week £9 per ton basis for bars, which a few weeks ago were selling at £7. This increase is due to the fact that they are working with very costly English coal, and simply represents the extra fuel cost. British works are also bound to pay higher prices for their fuel, and British bars, which at one time could be obtained at £8 10s., say a couple of months ago, are now being quoted at £11 10s. The whole situation is critical, and must remain so as long as the European unrest continues and so long as the French occupation of the Ruhr and of the Rhine districts continues. To-day we have almost to rule out hte Continent as a source of supply of iron and steel, and as there is no certainty about deliveries, the situation gets worse and worse. Only yesterday we got a circular from one of the principal Belgian works, in which they stated they were closing down 50 per cent. of their establishment because of fuel scarcity, and claiming the right to alter terms of all contracts and to cancel these if necessary. There are all the elements of serious trouble about, underwriters having now given notice of the ending of the war risk clause in insurance contracts, and if goods are shipped, especially German goods, there is a high war risk charge, varying from day to day according to latest conditions. Meantime fuel has gone up in price in this country, and iron and steel makers have been forced to make a number of increases over and above these. There is a big amount of business coming to this country that ordinarily used to go to the Continent. One contract alone from Japan for 10,000 tons of shipbuilding steel, which was placed on the Continent, has been transferred to British works. Besides all this, the shipbuilding industry is improving, so that the market to-day for iron and steel is decidedly firmer, and prices generally from the lowest have gone up from 15s. to [illegible] per ton. There is every prospect of material going still higher. America to-day in the iron and steel industry is enjoying most prosperous times and high prices, so that they have little available for export. Other metals are getting firm with increasing tendency. Copper, tin and lead have all increased during the past few weeks. The spelter situation is easier; out of the corner that was made in this commodity a big drop was expected, but there is no big drop now, simply a slight easing.

Britain: Mail Advices.

Pig Iron. The demand for pig iron is in excess of the supply, but furnaces are held up by a shortage of coal. Odd lots of pig iron are quickly snapped up, but, as a rule, furnace owners have nothing to sell. North Staffordshire forge, 80s. 6d.; No. 3 foundry, 90s. to 92s. 6d.; Northamptonshire forge, 77s. 6d. and upwards; foundry, 87s. 6d. up. Derbyshire forge, 77s. 6d. to 80s.; No. 3 foundry, 90s. to 92s. 6d.

Quotations.

Tin Plates. 20 x 14 basis, f.o.b. Swansea, 21s. 3d. to 21s. 6d. The demand continues brisk.

Galvanised Sheets. Firm conditions prevail in the market, and prices are £19 to £19 5s. for 24 in. gauge corrugated sheets in bundles.

Pig Iron (Cleveland). Foundry No. 1, 120s.; No. 3, 115s.; No. 4, forge, 105s.; mottled, 102s. 6d.; hematite, mixed numbers, 107s. 6d. Scotland No. 1, G.M.B., 110s.; No. 3, 105s.; hematite, f.o.b. Steelworks, 110s.

Finished Iron and Steel. Iron: Crown bars, £11; best bars and angles, £11 10s.; tees, £12; steel billets, soft £8 10s., hard £9, bars and angles, £9, tees, £10, joints and channels, £9 5s.; sheets, singles, £13, doubles, £13 10s. lattens, £11 5s., plates, ship, £9, boiler £13, rails, £9.

Continental Steel Works.

The position with regard to deliveries of iron and steel material from Continental works is becoming serious. Many contracts which were drafted at firm prices weeks ago are now being redrafted, with the result that buyers in Britain are unable to give delivery to their customers abroad. It is stated that meetings of steel manufacturers have been held in Belgium at which, when it was pointed out that the fulfilment of the low-priced orders on their books would result in severe losses, the manufacturers were advised by Government representatives present to plead *force majeure* and cancel their contracts. Apart from the difficulties in which this attitude may involve many British merchants, one of the principal effects of this policy will be to enhance the reputation of the British works by comparison. In other directions the high-handed French proceedings on the Ruhr are causing much annoyance to the steel industry in Britain. Quantities of half manufactured German material urgently required by British finishing works are held up at the Ruhr works owing to difficulty of securing transport. The situation is further complicated by the French threat either to prohibit the movement of iron and steel material from the Ruhr, or to levy heavy customs duties on exports. It is estimated that the German works have on their books British contracts for about 10,000 tons of tube alone, as well as for several thousand tons of raw material, which is urgently required by the British tube makers.

Who in your plant takes the Initiative on Lubrication?

[illegible]

[illegible]

[illegible]

[illegible]

"Are we using the correct oil on each piece of machinery in our plant? Are we using it correctly? If not, we may be wasting power and courting trouble. Let us be sure we are right."

[illegible] conditions.

[illegible]

[illegible] question what [illegible]

[illegible]

GARGOYLE

Lubricants

A grade for each type of service

VACUUM OIL COMPANY
OF SOUTH AFRICA, LTD.

[illegible]

CAPE TOWN, JOHANNESBURG, PRETORIA,
KIMBERLEY, BLOEMFONTEIN, MOSSEL BAY,
PORT ELIZABETH, EAST LONDON, DURBAN,
LOURENCO MARQUES.

FERREIRA DEEP, LTD.

[illegible]

DECLARATION OF DIVIDEND No. 39

[illegible]

[illegible]

[illegible]

[illegible] FOUR CLEAR DAYS [illegible]

[illegible]

[illegible]

LAND [illegible], LIMITED.
[illegible]

[illegible]

STANDARD BANK

OF SOUTH AFRICA,
LIMITED.

(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862

Authorised Capital	£10,000,000
Subscribed Capital	£8,916,660
Paid-up Capital	£2,229,165
Reserve Fund	£2,893,335

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United States.

Pig Iron.—Prices firm at from $29 to $30, Bessemer $27 to $28. No. 2 foundry is firm at a minimum of $25 Birmingham and $28 Buffalo and Western Pennsylvania.

Steel.—Prices have advanced in the steel market and premiums are offered for prompt delivery. Plates, shapes and bars are generally quoted at $2.25 but large running contracts have been booked at $2.15. Wire prices have been been advanced $2 to $4 per ton, making plain wire $2.65 to $2.75 and wire nails $2.80 to $3. Billets and sheet bars are firm at $40 per ton. The Algoma Steel Mill has restarted operations on an order for 16,000 tons of rails for the Canadian Railways. The United States Steel Institute's figures for the production of steel in January showed an increase of 171,801 tons to 3,251,694 tons. This is the second largest month's output in the history of the industry, the largest tonnage being 3,299,149 tons in May, 1920. The United States Steel Corporation at the end of January showed an increase in unfilled orders of 165,072 tons to 6,910,776 tons.

France.

Returns published for the Comité des Forges show that the total production of pig iron in France during 1922 was 5,128,608 tons, distributed as follows: Basic iron, 244,252 tons; foundry iron, 1,259,043 tons; Bessemer iron, 16,193 tons; Thomas iron, 3,441,857 tons; special iron, 167,363 tons—an increase of 1,711,655 tons over the output of the previous year. The production in 1913 was 5,531,000 tons. Thus the total production is still below the pre-war level, despite the inclusion of the output from Lorraine.

Germany.

The prices of ore and steel materials have been materially advanced owing to the depreciation in the mark and the increased price of raw materials.

The Ruhr Ore Position.

The French decision to prohibit the passage of all metallurgical products, either from the Ruhr to Germany or *vice versa*, apparently aims to bring pressure to bear on the German steel masters by restricting their supplies of ore. Soon after the war the German steel magnates endeavoured to come to terms with the French on the question of supplies of minette ore for their Ruhr steelworks. Satisfactory terms were not arranged, however, and later supplies were sought in other directions. Krupps are understood to obtain 40 per cent. of their ore from the German Siegerland district, and most of the remainder from Sweden. Only some 20 per cent. has been brought from Lorraine for some months. Other German steel firms have adopted similar measures. If, however, the French decide to prevent either the export or import of ore between the Ruhr and unoccupied Germany, the works there would have to purchase their ore in Lorraine. As a counter to this move, the German works are reported to be contemplating closing down.

Japan: Electrical Plant from England.

The Japan Electric Light Co. of Osaka, has ordered a turbo generating plant of 50,000 kw. from the Metropolitan-Vickers Electrical Co. of Manchester. Up to the present the company has bought all such plant in America

Second-hand Machinery.

The second-hand machinery market this week has been a little active in certain lines, such as tanks and batteries, there have been several deals in those lines. Engines and boilers were somewhat stationary, in fact for industrial concerns electricity is very much installed now in lieu thereof when the current can be got from the V.F. Co. or the Municipality. There has been a demand for second-hand plate, which is very scarce. One second-hand dealer has just purchased a lot of boilers which have been working up to 140 150 tons pressure up to the time of closing down. These boilers are to be broken up for plate. It seems a great pity, he thought, to break up boilers of this description and giving such high pressure for the sake of a few plates, and no doubt, as in the past, when this has been done orders will come in for this class of boiler at prices four or five times above what is obtained for plate only. During the war there were many large multitubular boilers thrown out and broken up for steel plates, which came in very handy for the mines requiring different sizes, as it was impossible to import plates, but it does seem a shame, said a prominent dealer, that now when new plates are practically within a shilling or two of the prices of second-hand plate, such good boilers should be broken up. Spares of all kinds are becoming dearer every day, and second-hand machinery merchants are looking forward to the next company selling off its plant in order that they may again restock if possible. Business generally in this section has not been too bad this week.

Engineering Shops.

Some of these report fairly steady business, but the majority are rather quiet and would like increased activity.

Oils and Paints.

Mid-February quotations at per gallon or cwt. for bulk consignments: Motor spirit, 1s. 7d. to 2s. 2d. in cans; linseed oil: London, raw 3s. 11d., boiled, 4s. 2d.; Liverpool, raw 4s. 1d., boiled 4s. 4d.; gas engine oil: London 2s. 1d., Liverpool 2s. 2d.; separator oil: London 2s. 5d. to 3s. 9d., Liverpool, 2s. 7d. to 3s. 11d.; colza (pure): London 4s. 4d., Liverpool 4s. 6d.; petroleum: London and Liverpool 1s. 1d. to 1s. 2d. per gallon. Paints, in 5 cwt. lots: London and Liverpool 74s.; red lead: London 42s., Liverpool 42s. 3d. to 42s. 6d.; white lead: London and Liverpool 46s. to 53s. 9d.; zinc oxide: London and Liverpool 43s. 6d. to 47s. and 48s. per cwt. Turpentine: London 8s. 10d., Liverpool 9s. 2d.

Wholesale Prices in Britain.

The Board of Trade index number shows an increase of 0·9 per cent. in the general level of wholesale prices in January as compared with the average in December, the increase in the iron and steel group being 2·1 per cent. "Other metals and minerals" show a fall of 0·1 per cent. The index number for all articles is now 157·1, compared with 164 a year ago, the corresponding figures for iron and steel being 134 and 146·6.

The Unemployment Bureau in Britain.

The marked revival in trade during January finds its echo in the fall in the number of unemployed on the live registers of the exchanges on February 5 to 1,386,300. This was 23,690 less than the preceding week, and 473,433 less than the figure recorded at the beginning of January, 1922. Since the New Year, when the total number of unemployed was 1,485,800, there has been a decrease of 99,500.

Cost of Living in Britain.

The cost of living in February decreased one point to 76 per cent. above pre-war prices, compared with January, according to the Ministry of Labour returns. This is the lowest figure since May, 1917.

Development of Imperial Resources.

The President of the Board of Trade, Sir Phillip Lloyd Graeme, was entertained at luncheon by the Iron and Steel Industries Federation in London. In his speech he said the Government's first aim was to develop Imperial resources, and he believed there were infinite possibilities in co-operation with the Dominions and development of the Crown Colonies. The Government would do its utmost in this direction, and if necessary would use its credit to achieve this purpose. The British Empire, he said, was capable of as great expansion as the United States.

Timber and Building Materials.

The timber trade during the past week has been active. Stocks on hand are fair, with fresh consignments near the coast. The building trade is doing quite well at the moment as, although there are no very big contracts out, there are sufficient small jobs going to satisfy most contractors. There is a demand for good artisans, such as bricklayers and carpenters. The only drawback in this section, as in others, is that everybody is complaining of the tightness of money. The prices for bricks remain unchanged [illegible] West African mahogany, 1 in. to 4 in. [illegible] Honduras mahogany, [illegible] American yellow pine [illegible] Marseilles, [illegible] 1 to 3 ply.

Second-hand Iron and Timber.

[illegible]

Electrical Goods.

[illegible]

British Trade Returns for January and February.

Imports	[illegible]
Exports	[illegible]

[illegible] higher than the increase in value [illegible] and also in comparison with [illegible] totalled £57,509,000 [illegible]

South Africa at Brussels Fair.

[illegible]

Additional Capital for New State Areas: £500.000 Convertible Debentures.

[illegible] Johannesburg Consolidated Investment Co. and the [illegible] the bonds, which, it is understood, will carry 7 per cent. interest and be convertible within two years at the rate of 20 New State Area shares for each £100 debenture.

Coal.

At the annual meeting of the Dundee Coal Company, the chairman stated that it had made a gross profit of [illegible] and declared a dividend of 7½ per cent., which absorbed £24 [illegible].

Natal Coal for Holland.

The s.s. Jagersfontein, which sailed from Durban for Rotterdam on the 11th inst., via Cape ports, had over 1,000 tons of Natal coal for Rotterdam.

Torbanite Finds.

There has been a rush for options in the Ermelo district in connection with the recent discovery of torbanite, which, it is claimed, has given a yield equivalent to 120 gallons to the ton. There is a strong probability, although work done at present in the way of distillation has not gone very far, that torbanite and oil shale will soon be treated on a commercial scale. Great activity prevails in the matter of acquiring options; one party alone, it is stated, has secured rights over 50,000 morgen.

First Funding Payment.

Britain, according to a message from Washington, has made the first payment to the United States under the debt funding agreement, amounting to $4,128,000.

Tenders Recently Recommended by Town Council.

Messrs. Wilson & Herd, Ltd., for the supply of one 65 h.p. B.P.H. motor for the sum of £210; Telegraph Manufacturing Co., 10 miles ·04 sq. in. underwriters' wire at £67 per mile, £670; Griffin Engineering Co., 5 miles No. 6 s.w.g. underwriters' wire at £41 per mile, £206 5s.; Wilson & Herd, Ltd., 5 miles 4/0 trolley wire at £119 per mile, £595; U.S. Rubber Co., 5 miles 10 s.w.g. underwriters' wire at £24 10s. per mile, £122 10s.; Metropolitan-Vickers Electrical Co., 500 yards ·15 x ·15 x ·212 twin concentric high tension cable at 14s. 1·8d. per yard, £353 15s.; British General Electric Co., 500 yards ·062 x ·062 two-core high tension cable at 6s. 3d. per yard, £156 5s.; Hume Pipe Co. (S.A.), Ltd., 4,000 yards 4in. concrete pipes at 2s. 6d. per yard, £500; 8,000 yards 6in. concrete pipes at 5s. per yard, £2,000; 4,000 yards 8in. concrete pipes at 7s. 6d. per yard, £1,500; 500 yards 4/6 S.W. access junctions at 8s. 6d. each, £212 10s.; 100 yards 4/8 S.W. access junctions at 17s. 6d. each, £87 10s.; 500 yards 4in. S.W. bends, 1/8, at 3s. each, £75; 500 yards 4in. S.W. bends, 1/16, at 3s. each, £75; British Agencies, Ltd., 300 tons of Tarco at £21 5s. per 2,240 lb., £6,375; Archibald Taylor & Co., 200 tons of Barber Brand liquid asphalt at £19 3s. per 2,240 lb., £3,830.

S.A. Reserve Bank.

Ratio of cash reserves to liabilities to the public, according to Bank's statement on March 17, 66·6 per cent.

Latest Metal Market Quotations.

London, March 19.—Standard copper, £76 5s. cash, £77 three months; electrolytic copper, £83 sellers' option; £83 10s. buyers' option; copper wire bars, £82 15s.; standard tin, £225 15s. cash, £226 15s. three months; foreign lead, £28 15s. prompt, £29 forward; quicksilver, £12 5s.; bar silver, 32⅛d.; bar gold, 88s. 4d. per oz.

Box 3807. Tel. 5892.

WRIGHT'S ROPES

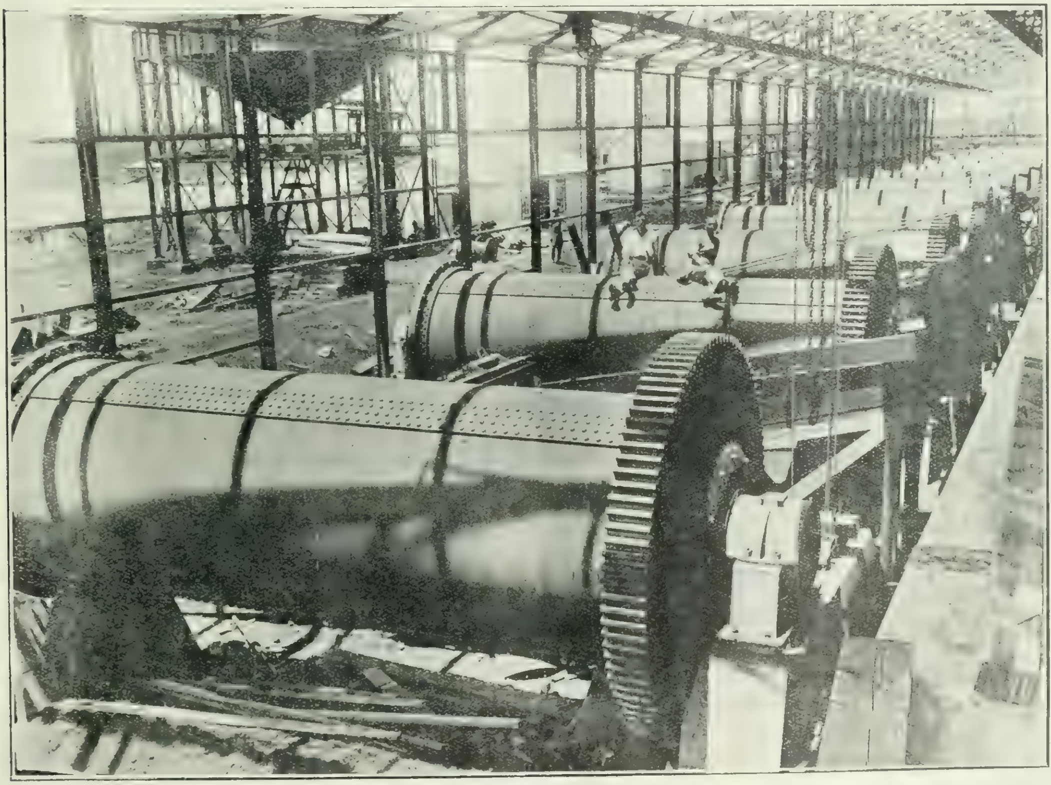
H. ALERS HANKEY - - - Sole Agent.

With Special Illustrated Cement Supplement

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MARCH 31, 1923. No. 1644.

Tube Mills—The Link Between Cement-Making and Gold Mining.



This battery of 13 tube mills is in course of erection at the New State Areas. They will have the biggest dimensions of any similar installation on the Rand. It is noteworthy that tube mills were adopted by gold mining from the cement-making industry.

Edgar Allen

Portland Cement Machinery

The letter reproduced below refers to the complete Thick Slurry Portland Cement Plant which was manufactured and installed by Edgar Allen & Co., Ltd., at the factory of the Humber Portland Cement Company, Ltd., near Hull, England. The initial plant, which has a capacity of 100,000 tons per annum, commenced production in September, 1921.

MELTON,
BROUGH, E. YORKS.
19th Jany., 1923.

To
Messrs. Edgar Allen & Co., Ltd.,
Imperial Steel Works,
Sheffield.

Dear Sirs,

Replying further to your favour of the 15th inst., referring to the general running of the plant you have supplied to these Works, we have pleasure in stating that the Machinery is proving satisfactory throughout; especially does this apply with regard to output, the results obtained in this respect being, as you are aware, considerably in excess of the guarantees embraced in your contract.

We wish to emphasise this point, as we feel that in some quarters preference is at times given by Home buyers for foreign machinery, and it is a source of satisfaction to us to know that we have equipped our works with a plant made almost entirely in this country, which has given results that should induce preference being given by prospective buyers to British manufactured goods.

As you are aware, we are on the point of making extensions to our existing plant, and we have pleasure in informing you we have decided to pass you our further orders for the machinery we require.

Yours faithfully,
per pro THE HUMBER PORTLAND CEMENT CO., LTD.
(Sgd). D. W. Massey,
Managing Director.

Head Office in South Africa
Edgar Allen & Co. (South Africa), Ltd.,
P.O. Box 551, 3 and 4, New Club Buildings, Johannesburg.

Agents for Natal:
Ingersoll-Rand Co. (South Africa), Ltd.,
P.O. Box 811, Durban.

New Capital for Far East Rand Mines.

PARTICULARS OF ISSUES OF £500,000 AND £350,000 6% DEBENTURES BY NEW STATES AND WEST SPRINGS RESPECTIVELY—ATTRACTIVE TERMS COMBINED WITH GUARANTEE OF "J.C.I." AND ANGLO-AMERICAN CORPORATION.

The details of the debenture issues by the New State Mines and West Springs are now available.

In exercise of the powers granted to them under the Company's Articles of Association, the Board of Directors of the New State Areas, Ltd., has authorised, and offers for subscription to Shareholders registered on 6th April, 1923, an issue of £500,000 six per cent. Debentures. In making this issue, the Board has in contemplation the provision of funds for liquidating the Company's indebtedness and completing the development and equipment of the mine to bring it to the producing stage. It is expected that crushing will commence on 1st May. Particulars of the proposed issue are as follow:—(1) The issue price will be at £100 per cent., and the debentures will be offered for subscription to shareholders only. The whole issue has been underwritten by the Johannesburg Consolidated Investment Co., Ltd., for a cash commission of 3 per cent. (2) The debentures will be registered and/or bearer debentures. They will be issued in the denomination of £100. (3) Interest at the rate of six per cent. per annum will be payable for a full quarter on 30th June, 1923, and thereafter half-yearly on 31st December and 30th June in each year. (4) Debentures outstanding at the end of the conversion period will be redeemed at par by means of ten equal annual drawings, to be made in the month of September in each year, commencing in 1926, and payable on 31st December. Alternatively, upon giving six months' notice, the Company to have the option of redeeming all outstanding debentures at £105 per cent. The Company has the right at any time to purchase in the open market or otherwise all or any of the debentures at or below par. All debentures so purchased shall be cancelled and may, at the option of the company, be set off against its obligation to redeem by annual drawings. Debenture holders may, on surrendering their debentures or any thereof and giving the Company one month's written notice before any of the conversion dates aftermentioned, claim in exchange therefor fully-paid-up shares in the company for the principal debenture moneys surrendered on the following basis, namely:—If such surrender be made one month before 31st December, 1923, the Company will issue 45 fully-paid £1 shares for every £100 of the principal debenture moneys surrendered; if such surrender be made one month before 30th June or 31st December, 1924, the Company will issue 42 such shares for every £100 surrendered; if such surrender be made one month before 30th June or 31st December, 1925, the Company will issue 40 such shares for every £100 surrendered. The debentures so surrendered shall be cancelled and the shares issued with all reasonable despatch after the abovementioned date next following such surrender. Such shares shall all be ex dividends declared before their issue. The Company will secure the debenture issue by first mortgage bonds. No limit is placed on the amount of debentures for which any shareholder may apply, but the allotment of the issue will be made at the absolute discretion of the board of directors.

DETAILS OF WEST SPRINGS ISSUE.

In terms of the Mineral Lease entered into between the Government of the Union of South Africa and the Anglo-American Corporation of South Africa, Ltd., on the 27th May, 1918, the Anglo-American Corporation undertook to provide the sum of £1,400,000 for the development of the West Springs property. By the 30th June next all the funds forthcoming under this guarantee will be exhausted. The development operations carried out on the property have disclosed large bodies of payable ore, which give an indicated tonnage of 1,762,000 tons of a value of about 32s. 6d. per ton. It is estimated that if development disclosures continue on the same scale until the 30th June next, the indicated tonnage will have reached 2,500,000 tons. These results are so satisfactory and encouraging that the directors have decided upon the immediate erection of reduction works. The design of the plant is such as to give a capacity of 60,000 tons monthly, but, for the present, construction will be confined to the erection of the units required for handling 40,000 tons per month. The design enables the additions necessary for bringing the plant to its full capacity to be effected readily and economically, and they will be made immediately the development of the property has been sufficiently extended. In order to carry out the present programme, a sum of £500,000 will be required. The directors, in the exercise of the powers granted to them under the Company's Articles of Association, have authorised an issue of £350,000 six per cent. first mortgage debentures, and in addition, have concluded arrangements with the Anglo-American Corporation of South Africa, Ltd., for the raising of an unsecured loan of up to £150,000 as and when required. The terms on which the debentures will be issued are as follow:—The issue price will be £100 per cent., and the debentures are offered for subscription to shareholders registered on the 7th April, 1923, the transfer books being closed for registration purposes from 7th April to 14th April, 1923, both days inclusive. Debentures will be "bearer," and will be issued only in denominations of £10 and £100. Applications must be in multiples of £10. Allotment will, in the first instance, be effected pro rata to shareholdings, this being in the proportion of £10 debentures for every forty shares registered. Special consideration will be paid:—(1) To applications for amounts up to £100 worth of debentures by shareholders whose holdings only entitle them to less than £100 worth of debentures. (2) To applications in multiples of £100 worth of debentures by shareholders whose holdings only entitle them to broken amounts of debentures. Applications in excess of those pro-rata to holdings, except those to which special reference has already been made above, will be considered according to the number of debentures available, the allotment of which will be at the sole discretion of the Board. If the amount allotted is less than that applied for, the balance of the remittance will be utilised in respect of the amount due on allotment. The Anglo-American Corporation of South Africa, Ltd., has underwritten the whole issue for a cash commission of 5 per cent., and will take up at par and pay for in full on due dates all debentures which are not applied for by shareholders in response to this offer. Interest at the rate of 6 per cent. per annum will be payable half-yearly on the 1st January and 1st July in each year, and coupons will be payable in London at the National Bank of South Africa, Ltd., Circus Place, London Wall; and in Johannesburg at the head office of the Company. Interest will be calculated on the first two instalments as from the 1st May, 1923, and on the remaining instalments as from the due date of each. The issue will be redeemed at the price of £105 per cent. by means of eight annual drawings of 12½ per cent. of the total issue of debentures. The annual drawings will be made in the month of December in each year, commencing in December, 1925, at the Johannesburg office of the Company, and payment will be made on the 1st day of February next following. The Company has the right, on giving six months' notice at any time to redeem the whole or any portion of the outstanding debentures. The Company also has the right at any time and from time to time to purchase in the open market or otherwise all or any of the debentures at or below £105 per cent. All debentures so purchased shall be cancelled, and may, at the option of the Company, be set off in whole or in part against its obligation to redeem 12½ per cent. of the total debenture issue by [illegible]. The debentures shall be payable as to 10 per cent. [illegible] upon application, 15 per cent. thereof on the 30th April, 1923, prior to which date allotment will take place, 25 per cent. [illegible] on the 15th May, 1923, 25 per cent. on the 15th June, 1923, and 25 per cent. on the 1st July, 1923. All [illegible] arising from applications for debentures will be taken up by the Anglo-American Corporation at par, and paid for by the [illegible] instalments [illegible]. Debenture holders will receive simultaneously with their debentures separate option certificates, entitling them at the [illegible] the option to subscribe for shares in the Company at par payable in full upon exercise of the option, on the basis of fifty £1 shares for every £100 principal moneys of debentures, such option to be exercisable only during a period of eighteen months expiring on the 31st December, 1924. The Company shall only be obliged to [illegible] and issue shares [illegible] options so exercised on the next of the following dates following such exercise, viz.: 30th September, 1923, 31st December, 1923, 31st March, 1924, 30th June, 1924, 30th September, 1924, and 31st December, 1924. The Company will secure the debenture issue by first mortgage bonds over the whole of its property and assets, movable and immovable. Shareholders will have the right to renounce their rights to apply for debentures. The terms of the arrangement with the Anglo-American Corporation of South Africa, Ltd., as to the loan of funds are that interest will be charged at the rate of 6½ per cent., calculated on daily balance and payable quarterly. As consideration for undertaking the loan, the Anglo-American Corporation will receive a commission of 5 per cent., which will accrue from time to time as and when advances are made, and upon such advances, and will be payable on demand. It is pointed out that in the event of the options given in connection with the debenture issue being exercised, a further sum of £175,000 will be available, and the receipt of this amount will greatly facilitate the financing of the increase in the plant to 60,000 tons monthly. The terms upon which the necessary funds have been obtained are, in the opinion of the Directors, distinctly favourable, and it is hoped that they will commend themselves to shareholders. The provision of the funds should result in bringing the mine to the producing stage about twelve months after the orders for the plant have been placed—or say, in April, 1924.

Indian Diamonds.

An illustrated article on the diamond industry of India, by Mr. Cyril S. Fox, of the Geological Survey of India, has appeared in a recent number of the *Diamond Worker* (Nov. 1922, p. 4). The following notes are taken mainly from this article. Diamonds have been associated with India from the dawn of history, and until 1725, when they were discovered in Brazil, India was the only diamond producing country in the world. Before 1600 the Indian lapidaries had learnt to cleave diamonds and to polish them with diamond powder. About the sixteenth and seventeenth centuries some remarkable diamonds were obtained from India, e.g., the Great Mogul (787·5 carats in the rough), Koh-i-noor (recut, 106·06 carats), the Orloff (194·75 carats), and the Pitt or Regent (cut, 164 carats). The Koh-i-noor and Orloff diamonds are believed to be fragments of the Great Mogul. The diamond localities in India are classified into three groups, all belonging to rocks believed to be of pre-Cambrian age. The southern group includes the districts of Cuddapah, Anantapur, Bellary, Karnul, Kistna and Godavari. In this group the diamonds occur on the surface, in deposits of alluvium, and in a shaly conglomerate or breccia in the Banganapalle sandstone, lying at the base of quartzite in the Karnul series of Madras. This horizon corresponds to the Semri sandstone of the lower Vindhyan formation of Northern India. In the second or eastern group of the Mahanadi Valley, the stones occur in alluvium. The third or central group occupies an area sixty miles long by ten miles wide, near Panna as the centre, belonging to the Rewa group of the upper Vindhyan formation, which is absent in Madras. The diamond mining industry still persists in this area, the gems occurring in a conglomerate or in alluvium derived therefrom. According to E. Vredenburg (*Rec. Geol. Survey, India*, 1906, 33, 275), the diamonds occur in a compact conglomerate containing vein quartz, pebbles of jasper (*sili*), green vitreous quartzite (*kansya*), etc., in an arenaceous ground-mass, which lies at the base of the Rewa shale and rests on the Kaimur sandstone. The local name for the diamantiferous conglomerate with sandstone matrix is *mudda*. When weathered or friable with a shaly matrix, it is known as *kakra*. There is a second diamantiferous conglomerate higher in the series, or at the base of the Bhander shales and at the top of the Rewa sandstone, but it does not appear to have been found *in situ*. The conglomerate was formerly mined by sinking great pits, some 25 ft. in diameter and from 30 to 50 ft. in depth, called "direct" workings by Vredenburg, to distinguish them from the shallow and alluvial workings. The diamantiferous material was hoisted in baskets to the surface, and the workings were drained by means of Persian bucket-wheels worked by bullocks, or by hand. During the last decade the production of diamonds from Indian mines has not averaged 100 carats a year. In those areas where from time to time occasional stones are still discovered, the villagers search the most likely places—fields, talus slopes, stream beds, etc.—after heavy rains or floods. The ground has been so thoroughly searched that new occurrences of the gem are now seldom found. Mr. Fox, in his article, refers to the ingenious devices employed in the mechanical treatment of ores, and to the well-known fact that diamonds and other precious stones adhere in a greater or less degree to grease, while quartz, sand and other valueless minerals adhere so weakly that they are easily washed off such a surface, and he points out that in the Union of South Africa "grease tables" and "grease belts" probably find 90 per cent. of the diamonds produced. He therefore suggests the scientific prospecting for Indian diamonds with suitable grease appliances. The dark basic rock in the Madras diamond area of Wagra Karur would probably be the most attractive for experimental treatment, although the diamond-bearing gravels of Panna State, and the sands of any river in which gemstones have been found would answer equally for such an experiment. It is impossible to say whether the operation would be profitable, but it is certain that more stones would be found than by the existing methods of search. Although a large number of Indian stones in the rough find their way to Europe, a cutting and polishing industry for precious stones has existed in a small way at Delhi, Jubbalpore, Ratanpur and various other places in India, but the workmanship is not of such a high order as that of Europe

Mining Men and Matters.

Mr. K. Sartorius, of the Union Corporation, is now managing the Rhodesian mines of that firm.

* * *

It is notified that the Right Honourable the Minister of Mines and Industries has, in terms of regulation No. 6 of the regulations framed under the Coal Act, 1922 (Act No. 27 of 1922, appointed the following persons as alternate members of the Coal Grading Committee of the Transvaal Province:—James Evelyn Vaughan, Esquire (Chairman, Natal Coal Grading Committee), as alternate to John Alfred Vaughan, Esquire (Chairman); Bailey Southwell, Esquire, as alternate to Stephen Cope Black, Esquire; William Pott, Esquire, as alternate to Professor James Gunson Lawn; Isaac Hodges, Esquire, as alternate to George Standish Persse, Esquire; Edwin Gilbert Izod, Esquire, as alternate to John Roy, Esquire.

Passing of The Robinson.

NO RELIEF FROM COURT.

The Robinson Gold Mine has been compelled to close down by an order of the Municipality in the interests of public safety. The Company communicated this disconcerting news to their London office in the following cable: "Johannesburg Municipality has notified the Company to discontinue mining in the neighbourhood of its main outfall sewer owing to the risk of jeopardising its safety, failing which they will apply for an interdict compelling the Company to suspend mining." The only payable ore remaining in the mine is contained in No. 2 Shaft pillars, in the vicinity of the area crossed by the sewer, which was laid about 1906.

"The Company has repudiated liability, but in view of the serious consequences to the public and the neighbouring mines should the sewer break, working of the pillars was discontinued on March 13. The Government mining authorities, under date March 21, 1923, ordered the Company not to resume work about the 14th Level in No. 2 Shaft without their consent, and will decide the limit of the prohibited area later. Unless permission is obtained from the Government Mining Engineer to resume mining of the shaft pillars and an arrangement come to with the Municipality to secure the safety of their sewer before the end of the month, there is no other course open but to close the mine, although there still remains sufficient payable rock to enable mining operations to be continued for approximately four months.

The Robinson Gold Mine commenced production at the beginning of 1888, and up to the end of last year had crushed 11½ million tons for a total output of 5,723,044 ounces of gold. The Company has distributed in dividends very nearly 12 million pounds, to be exact, £11,980,938, and the present capital of the Company is £2,750,000.

In view of an unsuccessful application by the company before Mr. Justice Curlewis, in the Rand Local Division of the Supreme Court this week, and the company's announcement as published above, the mine will in all probability close down at the end of the present month. This will affect 170 white employees, and, with natives, a total labour force of about 700.

Metal Market Quotations: London, March 26.

Standard copper, £73 15s. cash, £74 10s. three months; electrolytic copper, £82 seller's option, £82 10s. buyer's ditto; copper bars, £82 10s.; standard tin, £216 17s. 6d. cash; £217 12s. 6d. three months; foreign lead, £27 15s. prompt, £27 17s. 6d. forward; quicksilver, £12 2s. 6d.; bar silver, 32¾d.; bar gold, 87s. 10d. per oz.

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HAS THE LOWEST CO-EFFICIENT OF FRICTION.

KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.

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Orange River Oil Shale.

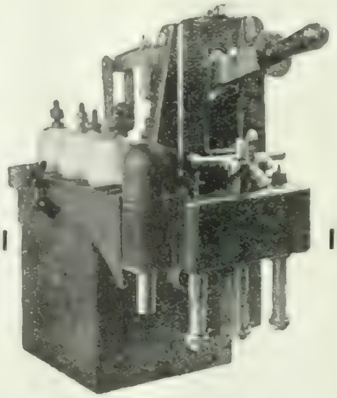
A KIMBERLEY VENTURE.

At a meeting of the Orange River Oil Shale Syndicate, held in Kimberley last week, Mr. F. B. Parkinson, Consulting Engineer, submitted interesting reports on the properties and the work so far done thereon. The first report was on the occurrence of oil shale on the farm Elandsdraai, adjoining Orange River railway station, in the district of Hopetown. The station is within a few hundred yards of the western boundary of the property. The farm is 3,542 feet above sea-level, and is distant from Kimberley 77 miles. The area is about 9,000 morgen, and Mr. Parkinson reported that the whole farm consisted of shales lying practically horizontal. Three boreholes had been put down in 1906, and perfect cores had been obtained of two oil-bearing seams of shale. The project was abandoned, however, because the price of mineral oils then was very much lower than it is now, and there was then but small demand for fertilising ingredients and chemicals. Now, however, a new syndicate had been formed, and a shaft 6 ft. by 4 ft. sunk close to one of the old boreholes as far down as the top 8 ft. seam of shale. Separate portions of this shale had been sent to different analysts, and their results were available. From these it would seem that at this part of the field the shale was hardly rich enough in oil to be considered for that product alone, but the ammonia was considerable, and it appeared to him that there were great possibilities for the production of power by gasifying this shale as a fuel in producers, scrubbing out the oil and ammonia as by-products. The carboniferous shale being so near the surface could be mined cheaply, and having established a large power unit the possibilities were excellent for the production of chemicals and raw materials for fertilisers. Mr. Parkinson enumerated the raw materials to be found on the spot, and mentioned that there was a Government scheme to bring an irrigation canal from higher up the river past Hopetown, and this would cross Elandsdraai. Several of the surrounding farms were under option to the syndicate now working on Elandsdraai, and there was every probability that the seams of oil shale passed under those also. It was quite possible that a mineable area existed for the production of gypsum, and a section had been marked off for prospecting.

A further report was furnished by Mr. Parkinson this month giving the result of further work, and in this report he stated that he intended proving a greater area of shale, as it looked most promising for the production of power. Mr. Parkinson added that so far only 137 acres had been proved, and this would give 2¾ million tons of oil shale, or eight million gallons of oil and 20 million gallons of ammonia. He emphasised that it was an excellent proposition for the production of power, being 300 miles from the nearest coalfields. An interesting discussion ensued, and the meeting was unanimous in approving of further development work.

Harbour Development.

It is understood that the report of Sir George Buchanan on the development of Table Bay Docks has now been received by the Minister of Railways and Harbours, and that it will be laid upon the Table of the House of Assembly at an early date. The report, it is believed, fully recognises the urgency of the works contemplated under the Modified Southern Scheme, and recommends their immediate construction. The only point on which Sir George Buchanan does not consider that there is any pressing urgency is in the matter of the proposed floating crane



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Witton Oil Switches, standardised in all sizes for voltages up to 60,000 volts can be supplied for remote control, electrically or mechanically operated. Stocks are carried in this Country.

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State Mines: Government Lease Inspector's Annual Report.

ORE RESERVES, DEVELOPMENT, AND UNION'S SHARE OF THE PROFITS—NEW CIRCULAR SHAFT.

From the report on the State Mines for the year ended December 31, 1922, by Mr. J. H. Twiddy, Inspector of Government Mining Leases, we take the following:—

In consideration of the rights granted under the lease, the company pays to the Government (a) a share of the net annual produce (i.e. the value of the gold produced, less cost of production and sums allowed in respect of exhaustion of capital) according to a sliding scale varying from a minimum of 10.75 per cent. to a maximum of 61.25 per cent.; (b) claim licences. The company is exempt from taxation in regard to its profits from gold under the Income Tax (Consolidation) Act, 1917. Under clause 11 of the lease, the share of the annual net profits due to the Government for the year 1922 is £737,838 11s. 2d. making a total of £3,787,313 6s. 5d. received by the Government since the commencement of the lease.

Ore Reserves.

The payable ore reserves estimated by the company as at the 31st December, 1922, amount to 10,324,000 tons of an average value of 8.8 dwt. over an average stoping width of 76 inches. Compared with the last estimate, as at the 31st December, 1921, this is an increase of 92,000 tons, whilst the average value has increased 16 inch dwt. Full particulars regarding these reserves are not yet in my possession, and further remarks will be held over until my next report.

Operations.

It should be borne in mind that the figures in this report for the year, representing work performed and costs thereof, are adversely affected by the industrial disturbances which took place during the first quarter of the year, and comparisons of figures with those of the preceding year do not show fully those improvements that may have taken place. Mining and milling operations did not approach normal until the month of May, during which month the native labour complement about reached the desired figure.

No. 5 Circular Shaft.

The sinking of this shaft commenced at the beginning of the year, and at the end of the year the footage sunk amounted to 202 feet. The concrete collar is built up 15 feet above ground level, making the shaft bottom 217 feet below the collar. The shaft was lined out with concrete to about 60 feet of the bottom.

As stated in my last annual report this shaft is being sunk for ventilation purposes only. The diameter inside the lining is 22 feet, and its total depth will be about 3,460 feet. The lining is of solid concrete built in behind steel tubbing, the tubbing being removed when the concrete has set and reused as the lining proceeds. This is a departure from the usual practice of building the lining of concrete slabs or bricks. The galloway stage used for building up the shaft lining, and which also forms the penthouse for the protection of the sinkers, is suspended on four wire ropes, and these ropes form the guides for the sinking buckets which are run in balance. Hitherto circular shafts on the Rand have been sunk by single drum hoisting.

The dolomite formation was entered a few feet below surface, the thickness of it being about 200 feet. A considerable amount of water was encountered, approximating to one and a quarter million gallons a day, which greatly hindered sinking operations, but this big flow should be overcome as soon as the concrete lining reaches beyond the dolomite formation. The striking of this water, although undesirable from a shaft sinking point of view, has proved to be of great service, as water shortage has hitherto caused considerable anxiety in connection with the working of the property, the shortage having hitherto been made up from supplies from the New State Areas and the Rand Water Board.

North-west Shaft.—The development in the north-west corner of the property has proved further payable ground. The development on the whole shows a higher percentage of payability than for the preceding year, although the average value is somewhat less.

North-east Shaft.—The primary development on the east side of the shaft has been on the 10th, 12th and 14th level drives. The first mentioned drive is now within 100 feet of the eastern boundary of the property, and work for the time being is stopped. The reef exposed during the year was low grade. The values on the 12th level were unsatisfactory on the whole, but the 14th level disclosed an area of considerable value.

South-west Shaft.—The percentage of payability in this shaft section has been maintained, but the values have fallen off compared with the previous year.

South-east Shaft.—No further development has been carried out towards the eastern boundary north of the dyke. The averaeg for the year is somewhat higher in percentage of payability, the value being about the same as for the previous year.

Reviewing the mine development as a whole, although the footage accomplished has been somewhat less than that during former years, the payable ore reserves have been maintained.

The percentages of rock broken at the different shafts were in close approximation to those of the previous year. The average value of the rock broken in stopes was about half a pennyweight higher than the average for the previous year. The percentage of rock stoped in the various shaft sections is in fairly close agreement with the percentages of the payable ore reserves in those sections. The average value and width of ore mined from the payable ore reserves according to data adopted in the estimation of reserves as at the 31st December, 1921, were 8.87 dwt. over 79 inches, whilst the payable reserves as a whole at that date averaged 8.48 dwt. over 77 inches; overmining has therefore taken place to the extent of 0.4 dwt. per ton. When the expenditure incurred during the first quarter of the year due to the industrial disturbances is taken into consideration this overmining which would give an extra recovery of about 1s. 10d. per ton of ore mined from these reserves is not unjustifiable although it would more than recoup those losses. The face sampling value of the ore mined in the payable ore reserves was 18-inch pennyweights higher than the corresponding estimated block value—an increase of about 2½ per cent. If a comparison is made over the last four years, the sampling value of the ore mined has averaged 10-inch pennyweights higher than the estimated value in the calculation of the payable ore reserves, this close comparison showing a difference of only about 1½ per cent. is very satisfactory.

The average stoping width was the same as that estimated to be carried but the external waste mined was 3 inches less owing to the channel width having increased above the estimate by this amount. A considerable tonnage, amounting to 208,229 tons carrying a value of 9.3 dwt. was obtained from lashing out and sweeping worked out stopes.

Compared with the previous year there was a decrease of 268,500 tons on the tonnage milled and 61,915 ounces in the gold obtained. The value of the ore before milling was 0.73 dwt. higher. The sorting out of waste rock has been considerably closer during the year, as the percentage sorted shows an increase of 4.41 per cent. notwithstanding that less waste was mined. This closer sorting is reflected in the improvement in the difference between the value of the ore before and after sorting compared with previous years when the percentage of sorting had much less. The plant for handling the waste from the bins to the dump is, I understand, now working to its full capacity, and this places a [illegible]. The elimination of this extra 4·44 per cent. of waste rock during the year results in the first place the saving of a certain proportion of milling and treatment costs on some 22,000 tons, the only extra expense incurred being practically that in connection with the employment of a few native [illegible] on the sorting belts. In the second place, [illegible] the removal of this waste, [illegible] which carried an [illegible] not exceeding half that of the total [illegible], has permitted its replacement by a similar tonnage carrying [illegible] the average value of the ore milled, namely 9·3 dwt. per ton. On the basis of the gold recovered per ton milled being sold at the average value for the year, the replacement of this 4·44 per cent. of waste rock with gold-bearing rock has been the means of increasing the revenue for the year by about £112,840. From the foregoing figures it is obvious that to sort out waste rock to the utmost economic limit is distinctly advantageous.

Of the total revenue from gold, the sum of £223,983 13s. 8d. represents the amount of the premium, being at the average rate of 7s. 5·4d. per ounce and equivalent to 3s. 5·6d. per ton milled. This is a decrease of 13s. 4·7d. per ounce and 5s. 2·0d. per ton milled compared with the previous year.

Government's Share of Profits.

The share of the annual net profit for the year payable to the Government under clause 11 of the lease is £737,838 11s. 2d. For the previous year the amount was £896,181 1s. 1d. The expenditure for the year has been examined by myself and an official of the Inland Revenue Department with regard to its correct allocation as between working and capital expenditure in terms of the Profits Tax (Gold Mines) Proclamation, 1902.

The average number of white employees at work during the year was [illegible] compared with 839 during the previous year. The average number of coloured persons at work during the year was 5,677 underground and 1,378 on surface, making a total of 7,055 compared with 6,526 underground and 1,508 on surface, totalling 8,034 for the previous year. The average number of coloured and white employees at work during the year was greatly affected by the strike at the commencement of the year. Two dividends were declared during the year, namely dividend No. 10 of 20 per cent. (4s. per share) payable at the 30th June, and dividend No. 11 of 30 per cent. (6s. per share) payable at the 30th September, 1922. But for the dislocation of operations during the strike period the working of the mine has been satisfactorily carried out during the year.

Geological Society of South Africa.

The twenty-seventh annual general meeting of members of the Geological Society of South Africa was held at the Scientific and Technical Club, Johannesburg, on Monday, the 19th March. Mr C. J. Gray, president of the society, was in the chair, and there was a good attendance of members. Mr Gray delivered an address on "The Utilitarian Value of Geological Investigation," which he illustrated by reference to the geology of South African soils. This address will be fully reproduced in our columns.

DESIGNS —— DRAWINGS —— TRACINGS

Working Drawings made from clients' sketches and instructions. [illegible] and structural [illegible] for [illegible] or [illegible] drawings prepared for patent specification.

J. E. PARKER, M.I.Mech.E., M.A.I.M.E.,
'Phone 1760. Box 559, Pretoria.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

April 27: Robinson Deep (a), 11.30 a.m.

April 21.—Mozambique Portland Cement Co., Ltd. (a), 12 noon.

May 4.—Consolidated Langlaagte Mines, Ltd. (s), 11.30 a.m.

Langlaagte Estate and Gold Mining Co., Ltd. (s), 12.15 p.m.

May 8.—Knight Central, Ltd. (a), 2.30 p.m.; (s), immediately after.

May 15.—Modder B (a), 11 a.m.
E.R.P. Mines (a), 12 noon.

May 15—Modderfontein Deep Levels, Ltd. (a), 11 a.m.; Geduld Proprietary Mines, Ltd. (a), 12 noon.

May 17.—Rose Deep (a), 10.30 a.m.
Village Deep (a), 11.30 a.m.
Geldenhuis Deep (a), 2.30 p.m

May 17.—Transvaal Consolidated Land and Exploration Co., Ltd. (a). 12.15 p.m.

May 17.—Union Corporation, Ltd. (a), 11 a.m.

May 22.—City Deep (a), 11 a.m.
Robinson G.M. (a), 12 noon.

May 25.—Crown Mines (a), 10.30 a.m.
Durban Roodepoort Deep (a), 12 noon.
Rand Mines (a), 2.30 p.m.

May 25—New Kleinfontein Co., Ltd. (a), 11 a.m.

May 25—Apex Mines, Ltd. (a), 10.30 a.m.

May 28.—Consolidated Langlaagte Mines, Ltd (s), 11.30 a.m.

Langlaagte Estate and Gold Mining Co., Ltd. (s), 12.15 p.m

May 28.—Consolidated Langlaagte Mines, Ltd. (a), 11.15 a.m.

Langlaagte Estate and G.M. Co., Ltd. (a), 12 noon.

Randfontein Central G.M. Co., Ltd. (a), 3 p,m,

Randfontein Estates G.M. Co. (Wit.), Ltd. (a), 3.30 p.m.

May 29.—New Primrose G.M. Co., Ltd. (a), 11.30 a.m.
New Unified Main Reef G.M. Co., Ltd. (a), 11.45 a.m

Witwatersrand G.M. Co., Ltd. (a), 12 noon.

New State Areas, Ltd. (a), 2.40 p,m,

Van Ryn Deep, Ltd. (a), 3 p.m.

Government G.M. Areas (M.) Cons., Ltd. (a), 3.45 p.m.

May 29.—Monteleo Diamonds, Ltd. (a), 4.15 p.m.

May 30.—Knight Central, Ltd. (s), 11 a.m.

May 30—Witwatersrand Deep, Ltd. (a), 2.30 p.m.

SOUTH-WEST DIAMONDS (1920), LTD.

The secretaries report operations for the month of February as follows:—Cubic metres mined, 1,855; cubic metres treated after sifting, 311; carats won, 172.

The Utilitarian Value of Geological Investigation, Illustrated by the Geology of South African Coals.

Anniversary Address by the President, C. J. Gray, A.R.S.M., read at the Annual Meeting of the Geological Society of South Africa.

The address which it is my duty to deliver has given me much concern. Not being a professional geologist, I have had to ask myself whether there is any aspect of matters which interest this Society upon which I can speak with authority. My answer has not been altogether satisfactory, but looking back on my twenty-seven years as a Mines Department official, I see that consciously or subconsciously my interest in geology has always been particularly directed towards the economic bearing of geological facts or theories. A few instances may make my meaning clear and serve as an introduction to my subject.

An area of Swaziland schist is of interest because of the possibility of gold quartz mines, or deposits of copper, or of any of the other valuable metals or minerals found in such areas, the dip, foliation and composition of the schist are of interest, as they will affect stoping widths, possibilities of sorting and dangers and methods of support in mine workings; the folds and faults are looked at in relation to mineral deposits, and the questions asked are those in the folds or faults, or are they older or younger. Consider an area of granite. Is it the old granite with its paucity of mineral deposits, or is it the red granite with its tin and chrome iron ore? Is it older or younger than the mineral deposits in the schist into which it intrudes? Are the intrusions like dykes or are the schists blocks caught up in a granite magma so that their mineral deposits will be limited or changed by granite in all directions? Take an area of quartzites and shales with bankets. Do they belong to the Swaziland, the Witwatersrand or the Black Reef series? Does that make any difference to the continuity of the bankets, the uniformity, richness or metallurgical amenity of their gold contents? Turn to the Dwyka. It is such an interesting formation in itself that one hesitates to emphasise its economic interest, but it has such interest. It is the datum line for the Karroo system with its coals. You look for coal above but not below. You stop your borehole promptly, if when searching for coal you strike the Dwyka. It is also the practical joker in the geological table. It picks up boulders and stones of all kinds from far and near, and launches them off in the soil drift on the hill sides, or it quickly weathers away on the flats and vanishes, leaving these boulders and stones to bewilder the unsuspecting. Many a prospector who has found a boulder of gold quartz or banket has searched in vain for the reef. The man with more knowledge wonders from what direction and for how far the Dwyka carried those boulders.

If we leave those formations which are generally mapped in their geological sequence, and turn to the dykes and sheets of igneous rock by which they are broken and interbedded, I find again preponderating economic interest. Their age in relation to the deposits, and therefore their action in breaking through them or not, their genetic connection, if there is such with the deposits, their influence, if any, in enrichment or impoverishment, their systems of jointing and the characters of joints in relation to security in mine workings, their varying methods and liability to weathering, affecting their security in open workings, or the possibility of recognising and tracing them in prospecting, are all of interest. Special interest attaches to the behaviour of the sheets and dykes in the coal measures, as they cut up the coal areas into blocks, and when in proximity to the seams affect the character of the coal, the alteration being due either to their heat at the time of injection or to the solutions accompanying them.

You may notice that the points of interest to which I have referred so far are all connected with prospecting or mining, but even a mining man finds interest in geological facts bearing on the economics of agriculture and home making. The water supplies obtainable from different strata, the manner in which the water occurs, permeating a porous rock or in fissures in a less porous rock, the relation of folds, dips, faults, igneous sheets and dykes to underground water supplies or to springs, the characters and depths of soils formed from different rocks, the effects of the different rocks and geological structures on the surface contours, the characters and frequencies of jointing in rocks making them more or less suitable for building purposes are all points which give economic interest to geology.

My interest being as I have shown, preponderatingly economic, I have decided to address you on that aspect of geology and to endeavour to stimulate your interest in that direction. I do not, however, for a moment suggest that all your work should be directed to economic ends and that there should be no accumulation of knowledge of those facts of which the economic value, if indeed there is any, is unsuspected, for study of geology is in itself a joy and education, and it is often quite impossible to say what facts are, or are not, of economic significance. Indeed it is my intention to show that there is economic significance underlying geological study where that would not be recognised by the uninitiated, or at the time even by the geologist. Only a few illustrations must be selected, for the field is far too wide to cover with any approach to completeness. I have selected those in connection with coal partly because certain points can best be illustrated in connection with deposits of that mineral (or shall we call it substance?), partly because a mine of information is available, more particularly in the recent addresses and papers by Dr. Du Toit, Dr. Mellor and Mr Stent and the memoir by Mr. Wybergh, and partly because I may know a little about some coal deposits which is not known to all of you.

The first point which I would take up is the value of stratigraphy consistently carried out over large areas, with due attention to both lithology and fossil remains, and I would illustrate it by reference to the coal deposits of Natal and Zululand. Dr. du Toit's presidential address in 1918 on "The Zones of the Karroo System and their Distribution" contained a most admirable demonstration of the point. By careful following up of the Karroo zones from the Cape, through Griqualand East, and the coal areas of Natal, he showed that the principal coal seams of Natal are associated with felspathic sandstones and grits in the Middle Ecca sandwiched between the shales of the Lower and Upper Ecca; he showed that above the Upper Ecca there are again coal seams, though thin, near Willow Grange, Frere and Bergville in the felspathic sandstones and grits of the Lower Beaufort, while still higher above the Middle and Upper Beaufort there are thin seams in the Drakensberg in the felspathic sandstones and grits of the Molteno beds. Prior to du Toit's work, it was recognised that the Drakensberg coals were in the Molteno beds and clearly separate in age from the coals of the main Natal coal field, that having been shown from palæbotanical evidence by the late W. Anderson (Second Report, Geological Survey of Natal), but it was not recognised that the Willow Grange and Bergville coals were not of Ecca age, and that the Ecca coals might possibly underlie them. If du Toit is right, and I cannot doubt it, I personally when in Natal was seriously in error, my sporadic observations having led me astray. Though I had some vague misgivings about the "coal measures" south of the Tugela, and therefore in my geological map stopped the line separating the Ecca and Beaufort before reaching that area, I certainly thought the known seams were the same as the seams worked at Elandslaagte to the north, and that it was useless to bore to any considerable depth below them. Whether it is worth while to bore there in view of such deep boreholes as those at Frere, Estcourt, Glendoone and Mooi River having been put down in the past without finding coal seams of value may be doubted, but nevertheless du Toit's stratigraphical work enables that economic question to be considered on a correct basis which was not possible before. The value of the work, however, is not confined to the area in which it was done, for the information obtained may be applied tentatively elsewhere, as du Toit himself applied it in reference to coals outside the area which he had studied in Natal, but I wish, despite that, to draw attention to the need for similar stratigraphical work in Zululand.

(To be continued.)

Position and Prospects of the Modder "B."

RECENT DEVELOPMENT RESULTS—POINTS FROM ANNUAL REPORTS.

Below are shown the most important results in comparative form, for the last two years, of the Modder B.—

	1921	1922
Tons milled	[illegible]	[illegible]
Yield per ton milled—dwts.	10.027	*10.725
Yield per ton milled at standard price of gold	41s 5d	*45s 2d
Working costs per ton milled	23s 0d	24s 0d
Working profit per ton milled at standard price of gold	18s 5d	*21s 2d
Working profit at standard price of gold	£628,032	*£609,900
Revenue derived from price of gold above standard	£384,697	*£ 91,566
Revenue derived from price of gold above standard (per ton milled)	11s 3d	*3s 3d
Revenue derived from special clean-up at estimated value	—	£80,750
Revenue derived from special clean-up at estimated value (per ton milled)	—	2s 10d
Total working profit realised ...	£1,012,729	£782,216
Total working profit realised (per ton milled)	29s 6d	27s 3d
Ore reserves—tons	2,773,300	2,609,600
Ore reserves value—dwts.	9.6	9.3

*Excluding special clean-up.

The Consulting Engineer, Mr. H. Stuart Martin, in his annual report, writes as follows:—"The figures for the year 1922 cover the strike period January-March, during which only a small tonnage was milled and an actual loss of £7,204 incurred. The reduction of £230,513 in total profit during the year is partly due to the loss of profit during the strike, but mainly results from the lower price realised for gold, equal to 8s. per ton milled. The amalgamation plates were discarded towards the end of the year and replaced by corduroy tables. 19,000 ozs. of gold were recovered from the former, which, since it has been accumulated on the plates from the commencement of milling operations, is treated as a special item in the above figures. A better comparison of work accomplished, and results obtained, is afforded from the following summaries which deal with the last half of each year only, during which periods operations may be taken as normal:—

	1921. July—Dec.	1922. July—Dec.
Average footage developed ...	2,391	2,848
Average tonnage milled	58,667	62,167
Yield per ton—dwts.	10.490	*10.956
Value of gold per ton at standard price of gold	44s 2.3d	*46s 1.3d
Working costs per ton ...	25s. 11.9d.	21s 2.7d
Profit per ton at standard price of gold ...	18s 2.4d	*24s 10.6d

*Excluding special item of 19,000 ounces.

Considerable increases in average monthly tonnage milled and footage developed during the second half of the year under review, with a notable reduction in working costs of 4s. 9d. per ton, have resulted from the improvement in conditions obtaining subsequent to the strike. The increase of nearly ½ dwt. in the yield per ton (excluding the special clean-up) is mainly due to the fact that, of necessity, operations have been largely concentrated in the richer blocks in the western portion of the mine. A further cause of the increased yield is the continued effort of the management towards cleaner mining which has resulted in a marked decrease in the mine stoping width. In spite of the restriction of operations during the period of the strike, the development footage accomplished for the year was almost equal in total to that of the previous year, while the footage on reef was actually greater. Unfortunately, the results obtained were disappointing, both the percentage of payability and the average value being lower than for the previous year. The estimated payable ore developed aggregated 486,700 tons, valued at 6.9 dwts., the value of this tonnage comparing most unfavourably with the value of the ore stoped from the payable ore reserves during the year. Your Manager's report gives details of the exposures in the various sections of the mine. Development results in the south-western section were less satisfactory owing to the erratic widths and values of the reef exposed. The blocks of ore developed in the north-eastern section were of medium or low grade only, while the work carried out at the south-east shaft has failed to locate any area of payable ore. On the other hand, in the south-eastern corner of the property, driving was carried out from the Geduld raise with satisfactory results.

The tonnage and value of the ore reserves have been recalculated as at 31st December, 1922, and are estimated at 2,609, 600 tons at 9.3 dwts. over 60 inches. This shows a decrease of 163,700 tons, a fall in value of 0.3 dwt. and a reduction in width of three inches as compared with the previous year's estimate. The decrease in tonnage is mainly brought about by the reduction in the estimated stoping width, as called for by recent stoping results, while the lowering of the value is due to the lower value of the ore developed during the year. Particular attention is being given to the rejection of waste rock from the ore sent to the mill. During the year under review 759,314 tons were broken in mining and development operations, and of this tonnage, 87,632 tons were eliminated and stowed underground, 34,884 tons hoisted and sent direct to dump, and 68,880 tons sorted out at the surface stations. Thus, 191,396 tons, or more than 25 per cent. of the total was rejected. Further, during the latter portion of the year, as your Manager points out, the stoping widths were appreciably reduced. These factors, and the very high footage of development done (over 3,000 feet in December), should be borne in mind when considering the present satisfactory costs per ton milled in comparison with the pre-war conditions. Expenditure on capital account for the year under review was small and chiefly in connection with equipment and accommodation at the south-east and south-west shafts.

For the current year a moderate sum will be required to complete the air mains for the south-west shaft and to improve the ventilation of the western section, as mentioned in the Manager's report. Also some expenditure will be incurred in connection with a scheme (now under consideration) for centralising underground pumping operations in the deeper levels, thereby eliminating several existing small units and reducing pumping costs.

The Manager and his staff are deserving of great credit for the loyalty shown and success achieved in their efforts during the critical period of the strike and attempted revolution, to preserve the mine property, and also for the results obtained since resumption of operations. The better spirit in which the employees generally are now carrying out their duties is very gratifying.

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The Year with the Wolhuter Gold Mines.

Mr. Max Honnet, the Chairman, presided at the annual meeting of the Wolhuter on March 23, and said: Reference was made at our last annual gathering to the strike of white employees on the Witwatersrand Gold Mines, which commenced in January and had been brought to a conclusion a few days before the meeting. I need therefore say nothing about it now, except that, in total, that strike involved us in direct losses amounting to £24,532—a serious setback for the Company to suffer in its declining years. Besides this, our returns for the past financial year were adversely affected in comparison with the previous year by the severe fall in gold price (the decrease in revenue from our production on this account being no less than £64,348), and by a not unexpected decrease of .3 dwt. in the recovery grade of the ore milled. Thus, notwithstanding the satisfactory profits earned during the last five months of the year, our results for the twelve months under review was a working loss of £3,982 3s. 4d. Deducting the difference between certain outlays and receipts enumerated in the expenditure and revenue account, viz., £1,635 10s. 1d., we arrive at a net loss the first for many years of £2,346 13s. 3d. A glance at the appropriation account will show that we brought forward from the previous year a balance of £68,783 1s. 3d., which was increased by £3,084 10s. 3d., being credits derived from sales of property, machinery, etc., forfeited dividends, and a small adjustment in Government taxes; while on the other hand appropriations were made for the year's net loss, as well as for the purchase of ex-enemy shares and expenses, these items reducing the credit balance of appropriation account to an amount of £62,229 1s. 1d., which has been carried forward to the current year. This balance was made up of £27,477 6s. in net cash, after allowing for liabilities, and £34,751 15s. 1d. represented by realisable cash assets. Since operations resulted in a loss and our cash resources were none too large for our requirements, it was not possible to pay a dividend for the year.

Increased Efficiency.

The general re-organisation of labour on the Witwatersrand Gold Mines since the strike has resulted in a satisfactory improvement both in efficiency and lower working costs. In our particular case the working costs for the second half of the past financial year came down to an average of 19s. 8d. per ton milled, as against an average of 23s. 6d. for the year ended 31st October, 1921. At the present time our costs rule about 19s. per ton milled. Provided the native labour supply remains plentiful, as at present, it should be possible to keep costs down to this level, and even, perhaps, improve slightly. As regards tonnage output and grade of ore milled, I would direct you to the remarks of the Consulting Engineer and Manager, which truly reflects the position as it is to-day, though their respective reports were written three months or more ago. Our development work at present consists of the further testing of doubtful areas and the opening up of odd corners in the mine, from which it is not to be expected that any important bodies of ore will be obtained. The pyritic quartzite, which has been a useful source of ore supply during the last few weeks, is now nearly exhausted.

The Future.

For the future we have to rely upon reclamation and the small remaining ore reserve, the latter at the 31st October last standing at 302,000 tons of a value of 5·5 dwts. Of this quantity 47,190 tons, valued at 6·6 dwt., are in shaft and safety pillars and must remain for extraction at the end. The balance of 254,810 tons is low grade ore valued at only 5·3 dwt. scattered about the mine. Ore derived from reclaiming in worked out areas now forms a fairly large proportion of the tonnage sent to the mill, but this source of supply is unreliable both as to quantity and value. So that you will perceive we depend upon an uncertain supply of pretty low grade ore. Last year our recovery was 4·7 dwt. per ton milled, worth about 19s. 9d. at standard value of gold. The management believe this yield can be maintained during the current year, but you will realise that the margin for profit is small. Provided, however, we can mill in the neighbourhood of 32,000 tons and the small premium on gold remains with us, we are hopeful of being able to earn between £2,000 and £3,000 per month for the remainder of this year. The maintenance of operations on a scale up to our normal milling capacity is, by reason of the low grade character of the mine, a matter of primary importance. In this connection, it should be borne in mind that, owing to the more rapid depletion of ore in the Western Section, we shall be forced, sooner or later, to draw our main supply of ore from the Eastern Section, where the hoisting capacity is limited. At present a certain tonnage from the Eastern Section is sent over and hauled through the West Shaft, but the time will arrive when this can no longer be economically done, and our tonnage for the mill will then drop considerably.

The Life of the Mine.

Inquiries are frequently made about the life of the mine. I hesitate about being definite on this point, for you all know that these old established Rand gold mines have an amazing capacity for hanging on—the Wolhuter indeed has already outlived appreciably the prognostications of a few years ago. A factor which largely governs our remaining life is the tonnage of ore which will eventually be won from reclamation, and this it is quite impossible to estimate. But assuming that mining operations go on normally without serious disturbance underground or damage to shafts or vital parts of the plant, I believe, from what our technical advisers tell me, that we shall continue to work at a profit for about 18 months from now; at all events I feel tolerably certain we shall still be alive when we have our next annual meeting—that is, about this time next year.

Ex-Enemy Shares.

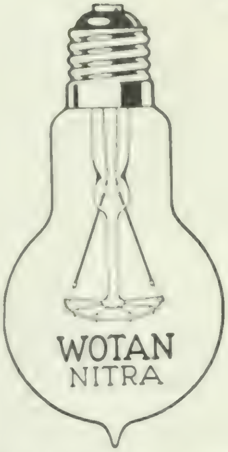
Just one other point I wish to deal with before I sit down, and that is the question of disposal of our Ex-Enemy Shares, of which you will remember we bought 92,021 last year at 1s. 6d. per share, plus 5 per cent. commission and expenses. One or two shareholders have suggested to the Board that these shares should not be cancelled, as hitherto contemplated, but should be distributed as a bonus. Having carefully considered this suggestion, the Directors are of opinion that a distribution would not be in the best interests of shareholders. The current market price of Wolhuter shares is about 2s. 9d.; to issue the Ex-Enemy holding as a bonus would therefore involve the distribution of 92,021 shares, valued at only £12,653, amongst the remaining 767,979 shares. In relation to the benefit secured, the amount of labour and expense involved in following such a course would be unjustifiable, and this position would be still further aggravated by the payment of a very large number of small cash sums arising from fractional holdings, in order to put all shareholders on an equal footing. When it is realised that on a pro rata basis a shareholder owning 100 shares would be entitled to receive 11·98 shares, which would be satisfied partly in shares and partly in cash, the whole of his bonus being worth only 32·9 shillings, and that new certificates would also have to be issued, I feel sure shareholders will agree that such a distribution is not worth the large amount of work and expense, for which they themselves would have to pay out of the Company's funds.

I may say that although cancellation and corresponding reduction of capital has been in mind, the Board has not yet passed any definite resolutions as to the method of disposal of these Ex-Enemy shares. For the present the shares are being held by the Company, but they will probably eventually be cancelled. I have pleasure in recording the Board's high appreciation of the valuable services rendered by the management during a very difficult year. I now beg to move that the Directors' Report, Balance Sheet and Accounts for the year ended 31st October, 1922, be received and adopted.

The reports and accounts were adopted.

"WOTAN"

LAMPS



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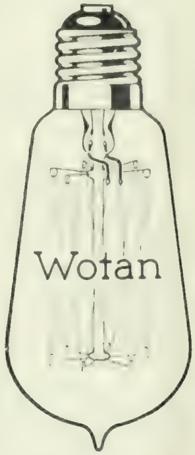

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CEMENT SUPPLEMENT.

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TOPICS OF THE WEEK.

The Chamber of Mines' Annual Meeting.

The address delivered by the President of the Chamber of Mines, Mr. H. O. Buckle, at the annual meeting last Monday appears in full in this issue. Sufficient time has now elapsed to enable the events and consequences of the upheaval of last year to be seen in proper perspective, and Mr. Buckle showed exactly how the industry had only just been saved by the timely action of the Chamber of Mines. Every one of the manifold questions—economic, legislative and administrative—that confront the industry in the course of a year was concisely dealt with by the President, and where all is so succinctly stated no summary is called for here. Too much emphasis, however, cannot be laid on the cardinal feature of the year. Had working costs remained at their former level, Mr. Buckle showed, nineteen mines would, in all probability, have closed down permanently and would have ceased to exist as factors in the production of wealth for South Africa. Their shutting down would have meant the dismissal of 7,573 white men, and, as they spent £853,053 on wages and stores in January, 1923, would have brought about a far greater contraction of business and more extensive unemployment throughout the Union than existed to-day. These figures showed quite clearly how absolutely essential it was to reduce working costs from the high figure which they had attained in 1921. "That has been done to some extent," said the President. "The costs per ton in December last were 20s. 6d., while a year earlier they were 24s. 11d. But even this is materially above the pre-war costs of about 17s. per ton, and it is to be hoped that a further approximation to that figure may be attained. It should never be forgotten that every reduction in costs, however small, means an addition to the quantity of ore which can profitably be mined, and therefore to the life of these fields. It is in this direction that the remedy for unemployment, so far as the mines are concerned, must be sought. As the Mining Industry Board stated, 'The lower they (costs) are, the more extensive will be the field of employment for labour, the larger the consumption of stores and material, and the greater the revenue, both direct and indirect, to the State.' "

Mr. Buckle added:—" Exaggerated ideas are still being disseminated in regard both to the number of employees retrenched and to the reduction in wages. Ever since the termination of the strike, the number of European employees has been steadily increased, and at the end of February was 17,025, as against 20,487 before the strike. The fact that an increased tonnage was obtained by a materially reduced number of men shows clearly that only redundant men have been discharged."

Mr. Buckle made an interesting reference to the paper by Dr. Lehfeldt, recently read before the Chemical, Metallurgical and Mining Society of South Africa, in which it was calculated that the average return of profit for 15 years from the mines was 6.2 per cent. per annum. Seeing the speculative nature of mining investments, that rate of interest must be described as inadequate rather than excessive. " That I may not unduly discourage investors," said Mr. Buckle, " I hasten to add that there is every hope of better results in the future."

But Mr. Buckle's address contains so much authoritative and thought-compelling matter that we must refer readers to the text itself, which promises to afford a store of material for future comment

" The Cement Age."

To distinguish it from the iron age or the stone age, the present has aptly been termed " the cement age." To-day almost everything is, or can be, made of cement or its ally, reinforced concrete. Ships, silos, pipes or pillar-boxes—all are swiftly, efficiently and comparatively cheaply made from reinforced concrete. To signalise the growth of the cement-making industry in South Africa we have been at pains this week to collect data bearing on the rise of the various works in this country and the conditions appertaining to the manufacture of this new essential product as a whole. It may be asked what cement-making has to do with what is primarily a mining and engineering journal. The answer is obvious to anyone who has followed the wonderful growth of recent years in the application of cement and concrete work to mining. Construction work on every new mine on the Rand bears ocular testimony to this fact. Moreover, the tube mill which to-day is playing so large a part in our newest reduction works, is primarily a cement-making machine. Indeed a romantic story could be told of the introduction of the tube mill to the Rand directly through the initiative of the makers of cement-making machinery. And it would be true. The illustrations scattered throughout this num-

[illegible] gave a graphic idea of the importance of the cement industry, the energy, skill and capital employed in the manufacture and some of the beneficial uses of the product. We may here quote an eloquent little passage from a brochure recently produced by the Cape Portland Cement Company, wherein it is claimed that "no industrial enterprise capable of such multitudinous land development may justly lead entitled to rank as a Nation-Building contributing so largely to the material wealth of the country. And, in the larger sense of 'the greatest good of the greatest number,' the assumption of the title is amply vindicated in the thousands of future new homes, and estates that will be made possible, by the efforts to supply a thoroughly sound cement at a fair price for the [illegible] in the end of the community and of the Nation." Which brings us to the practical question of overseas competition with the South African article. Despite the ordinary Customs Duty and the application by the Government of the "anti-dumping duty," the overseas product continues to enjoy an unfair advantage.

As is pointed out in a special article in our Cement Supplement, recently Parliament introduced legislation which was designed to give the local cement industry a still greater measure of protection in the shape of a "dump duty," of which it stands in dire need. This "dump duty" applied to British, Danish, Norwegian, and Belgian cement, but Sweden and Germany have been excluded up to the present. And in view of the present position of Germany there is not much fear of any serious competition from that country. That this protection was urgently needed will be evident from the fact that South African railway rates for cement to-day are 29s. 10d. per long ton from Slurry or Hercules to any coast port. On the other hand the ocean freight charge is 12s. 6d. per long ton from any European port to Capetown. This is the scheduled rate, but in point of fact shippers can probably get lower rates. This rate cannot be remunerative to the shipping companies, and South African Railways cannot compete against it. The shipping companies are cutting freight rates on European cement to an almost astonishing degree. The lowest pre-war cement rate was 15s. per ton, and all other rates are up. In this connection it is of interest to note that English cement is quoted for export to the Gold Coast at 11s. 6d. per cask f.o.b., and to South Africa 7s. 6d.

From Slurry to Capetown is 883 miles. The railage cost for cement over this distance is 30s., as against 12s. 6d. for 6,000 miles from England to Capetown. The railage from the new Cape cement works to Capetown, 104 miles, is 13s. 5d., or almost 1s. per ton more than the rate from Southampton to Capetown.

The only inference one can draw from these remarkable figures is that a desperate attempt is being made by overseas cement interests to capture the South African trade.

The Show: Why Not A Mining Section?

The great annual show of the Witwatersrand Agricultural Society, opened by H.E. the Governor-General this week, bids fair to eclipse all records of previous years. The show has in reality grown into a great industrial fair and exhibition, and its appeal is no longer confined to the farmer and his immediate friends. Now that the mining industry—as shown in Mr. Buckle's notable speech this week—has become alive to the wisdom of letting the whole country know its real place and importance in the economic life of the Union, perhaps it might be wise to seize the unique opportunity presented by the annual Rand Show to drive home the point in more tangible and practical fashion. For instance, the industrial section of the show might very legitimately be extended to embrace manifold branches of mining machinery used both on the surface and underground. This would not fail at any rate to be educational. Then graphic illustrations might be presented of the products of the mining industry and of the labour and supplies that go to win them. It is too late, of course, to attempt anything of this sort this year, but the Chamber of Mines people, who have been displaying such praiseworthy readiness to consider new suggestions of late, might possibly entertain the idea for future shows, not only on the Rand, but elsewhere in South Africa.

Notes & News.

Transvaal Gold Mining Estates.

The following cable was sent to London this week:— "Operations for current half-year having resulted in a working loss the Directors regret that no dividend can be declared per 31st March."

* * *

Rociberg Minerals Development Company, Ltd.: A Correction.

Last week we reported in these "Notes and News" under the heading "Rooiberg Minerals Tin Mines, Ltd.," that this Company had altered its capital and had signed on 800 natives and a full complement of white men in a week. Inquiries at the offices of the Company this week elicit the information that it has not altered nor has it any present intention of altering its capital. It resumed operations at the end of February, commencing with the treatment of the ore at grass. In the meantime preparations are being made to reopen the underground workings in order to take advantage of the present high price of tin. Only such labour, both white and native, as is immediately needed has been engaged.

* * *

Income Taxation Figures.

"There were nine persons in the Union whose incomes for the year ended June 30, 1912, exceeded £20,000. The incomes of eight of them, who were married, totalled £358,835; the ninth, who was a bachelor, had an income of £29,249. He paid £2,925 in income tax." These and many other interesting facts are to be found in the report of the Commissioner for Inland Revenue (Mr. A. P. McLoughlin) for the financial year 1921-22. During the year 224,250 forms were issued, as against 153,778 the previous year, and the number of cases completed at June 30, 1922, was 186,961, compared with 125,664; of these two figures, cases liable for tax represented 98,627 and 54,776 respectively. The collections in respect of normal and super tax were £5,481,368 for the 12 months ended June 30, 1922, and £4,009,835 for the previous 12 months—an increase of £1,471,533. The taxable income from diamond mining was £1,106,638, compared with £6,607,679 for the previous year. The figures for employment, i.e., salaries, wages, etc., show very big increases. This is almost entirely accounted for by the reduction of the abatement from £500 to £300. Notwithstanding this reduced abatement the taxable income from farming shows a reduction from £8,787,757 to £4,309,640. While the larger portion of this decrease is no doubt attributable to the fall in value of farm produce, the remainder is due to the readjustments that were rendered necessary on the adoption of the new principle of requiring stock values to be shown in all cases and to the amounts allowed as mortality allowances. The number of companies assessed shows an increase of nearly 100 per cent. That is accounted for by the elimination of the abatement of £300. £6,621,678 of taxable income was added back to taxpayers' returns after examination in the department. The percentage in the case of companies is 10.15, which is higher than previous years, but is no doubt attributable to the fact that all companies were liable to assessment consequent on the withdrawal of the abatement of £300. The tax recovered on amounts added back in taxpayers' returns more than covers the whole costs of collection of inland revenue.

For the tax year ended June 30, 1922, the collections for normal, super, dividend and excess profits, including an amount of £169,193, share of profits from the Government Gold Mining Areas (Modderfontein) Consolidated, Ltd., payable to revenue totalled £7,581,616. The assessed tax outstanding at June 30, 1922, amounted to £1,544,548.

Glynn's Lydenburg Share Offer.

Shareholders are aware that the Company has acquired a total of 31,901 ex-Enemy shares at the price of 9s. per share, plus a commission of 5 per cent. In order to recoup the expenditure on the purchase of these ex-Enemy shares and to strengthen the Company's cash position for effectively carrying on its programme of shaft sinking, equipment, development and power supply, the Board of Directors has decided to offer to shareholders 27,619 ex-Enemy shares on the basis of one share for every five shares held, no regard being paid to fractions, at the price of 13s. 6d. per share, this being approximately the current market price of the Company's shares. Shareholders registered at the close of business on 10th April, 1923, are now offered the shares in the proportion of one share for every five shares held, at the price of 13s. 6d. per share, payable in full on application. The whole of this issue has been underwritten by the Central Mining and Investment Corporation, Limited, at the same price, for a commission of 5 per cent. All expenses incidental to the transaction will be paid by the Company. The Company's share register will be closed from the 11th April to the 18th April, 1923, both days inclusive. A special form of acceptance, duly signed and accompanied by a Banker's draft or cheque on Johannesburg in favour of Glynn's Lydenburg, Limited, for the full amount of 13s. 6d. per share, must be dispatched so as to reach the Head Transfer Office of the Company, The Corner House (P.O. Box 2058), Johanneseburg, not later than the 18th April, 1923, after which date no acceptance will be entertained. Forms can be obtained by registered shareholders from the Head Transfer Office of the Company. Shareholders will receive due notice when certificates are ready for delivery. The remaining 4,282 ex-Enemy shares will be held for disposal later as may be found desirable.

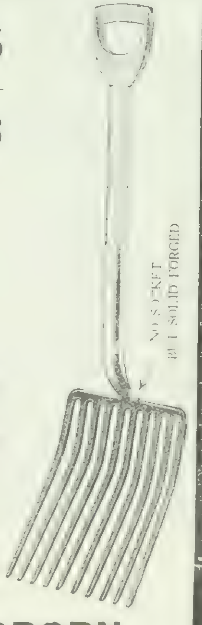
* * *

Trading on Mines.

The question of mine trading was discussed at the last monthly meeting of the Johannesburg Chamber of Commerce. The report of the Executive Committee states that the committee had had under further consideration the matter of trading on mines and the Transvaal Precious Metals Bill, which was before a Select Committee of the House of Assembly. A number of meetings had been held with representatives of Reef Chambers and the Witwatersrand Chamber of Reef Trade, and as a result a telegram was sent on March 16 to the Prime Minister, the Minister of Mines, and Mr. Emile Nathan, M.L.A., stating that the Chamber, in collaboration with all the Chambers of Commerce on the Witwatersrand, recommended the following amendments to the Government and the Select Committee: " Proposed amendments to Act 35 of 1908: Add to Section 97: ' No mining company under this Act shall after the   day of   , 1923, acquire or hold any shares or debentures in or any interest, direct or indirect, in any business in the Transvaal which trades with natives. Contravention of this section shall render such company liable on conviction to the same penalties as provided in Section 96.' Section 98—In (a) add: ' and to such employee direct (save under order of any competent court) or to any sick benefit society established in respect of the mine on which he is employed.' At the end of Section 98 add: ' No cession of his wages by any person employed on a mine shall be of any legal force or effect after the   day of   , 1923.' " The first paragraph covers the question of trading by the mining companies with their natives through the medium of the Native Recruiting Corporation stores. The second and third deal with the matter of " stop orders " given by a white employee through a mining company in connection with the distributing societies.

Bwana M'Kubwa Copper.

The Bwana M'Kubwa Copper Mining Company, which owns a large area in Northern Rhodesia, contemplates an early start of production. Accordingly, new funds are to be provided for adequate development and equipment. Details of the scheme are reserved for a meeting at which shareholders will be asked to authorise an increase in the capital to £500,000 by the creation of 2,000,000 new 5s. shares. Of these 100,000 " A " shares are to carry ten votes each, but in other respects they will rank equally with the existing and the new ordinary shares. Incidentally, the position of those at present holding option certificates for new shares at par may be affected, as are referred to in the following circular: " Since the statutory meeting on 27th July last, active development has been carried out resulting in the proving of over 7,000,000 tons of ore estimated to contain about 3·6 per cent. of copper. Experiments have been carried out for the treatment of the ore by Perkins' process, and a preliminary pilot plant is being erected on the property to treat 100 tons of ore per day, so that any improvement that may be necessary may be dealt with previous to ordering the first unit to treat 250 tons of ore per day, being part of a complete plant to treat 1,000 tons of ore per day. Arrangements have been made with the Rhodesia railways for the carriage of machinery from Beira at the rates and coal and coke from the Wankie colliery, and the carriage of copper in full truck loads from the mine to Beira. Negotiations are pending with the British South Africa Company for the acquisition of additional land and mineral rights, with Metals Production for the use on a satisfactory royalty basis of the Perkins' process, and with Minerals Separation for the subscription of capital."



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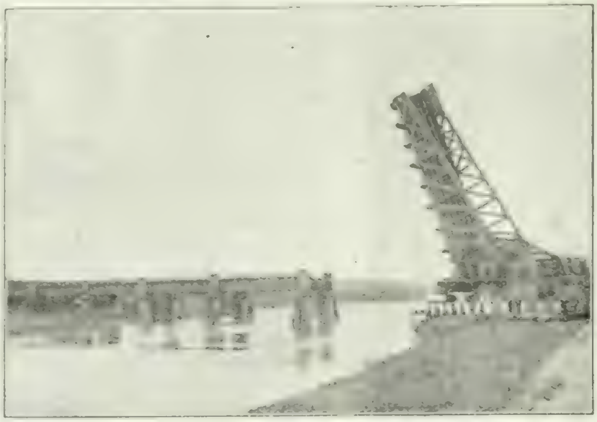

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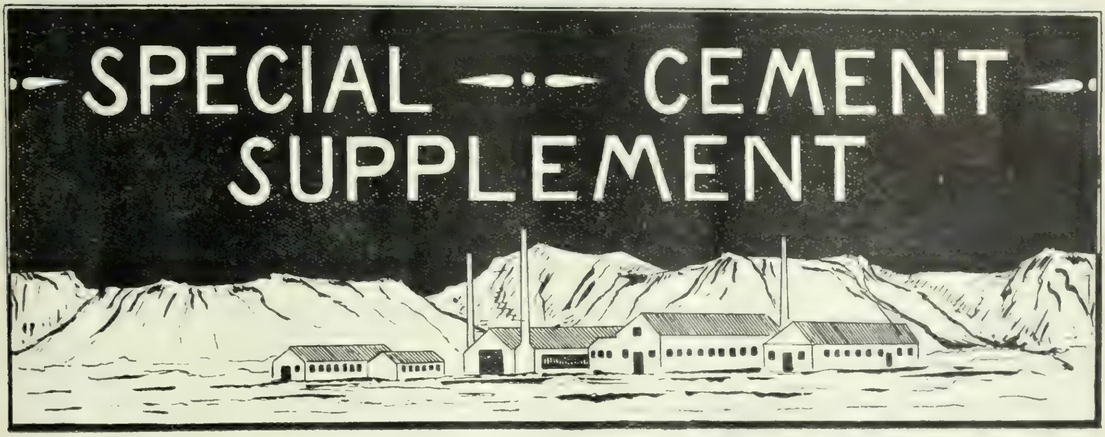
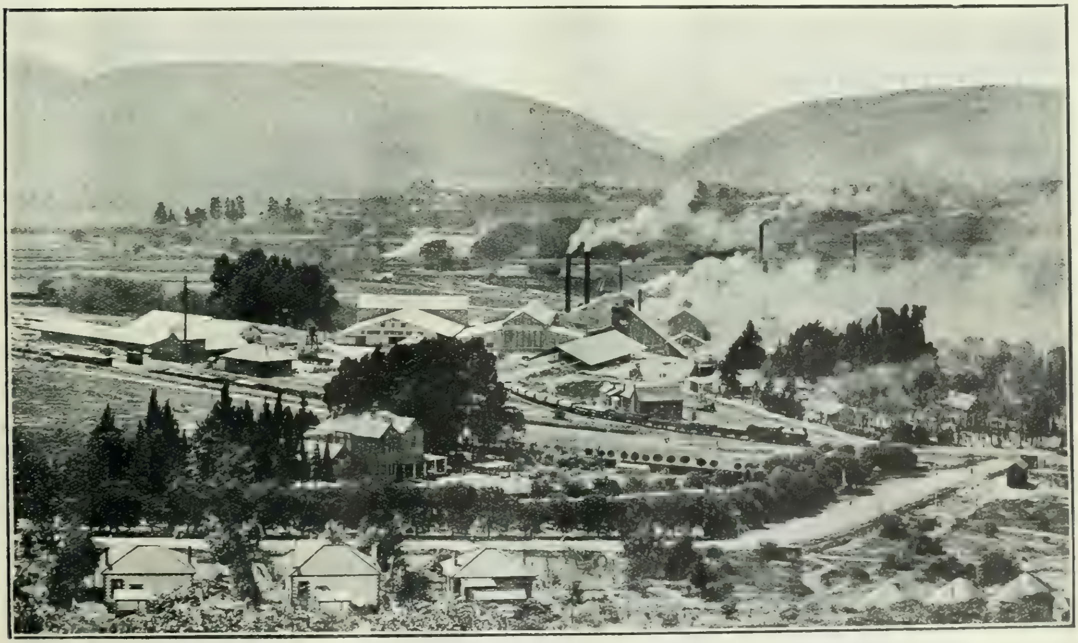


JOHANNESBURG, MARCH 31, 1923

Pretoria Cement Company's Original Enterprise.

THE HERCULES FACTORY—OUTPUT CAPACITY, 850,000 BAGS PER ANNUM.



The Pretoria Cement Company's Factory at Hercules, near Pretoria.

The original works of the Pretoria Portland Cement Co. are situated at Hercules, situated on the Pretoria-Pietersburg line and three miles distant from the capital. The first rotary kiln was erected here in 1904, and the plant to-day consists of two kilns, with output capacity of 850,000 bags per annum. The quarries are situated at Pienaar's River, about 10 miles distant from the factory, and the plant and quarries between them afford employment for about 60 white men.

The accompanying photograph gives an excellent idea of the general lay-out of the factory.

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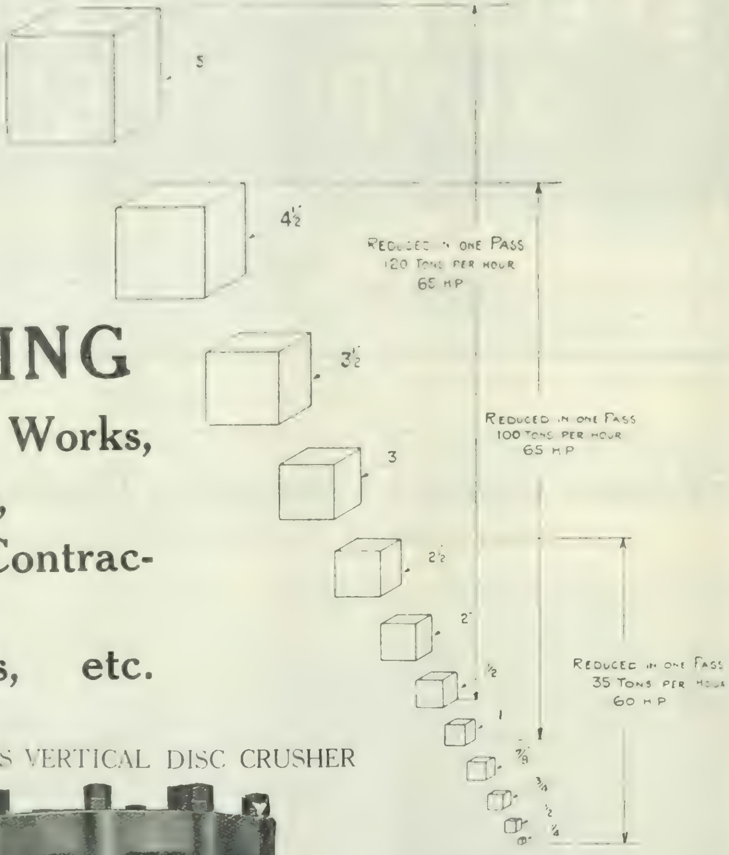

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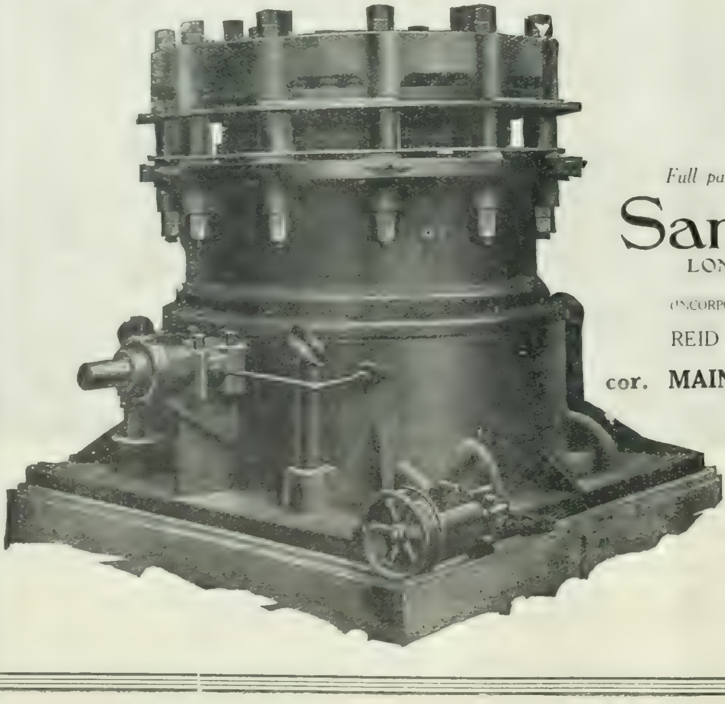

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The Slurry Factory.

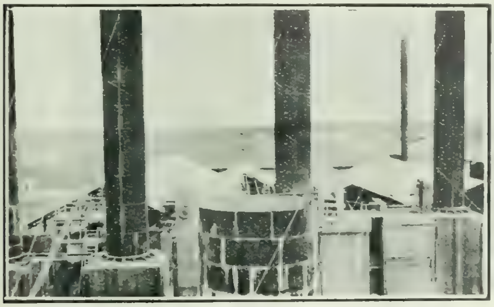
PRETORIA CEMENT COMPANY'S GREAT ENTERPRISE NEAR MAFEKING.

THE LAST WORD IN SCIENTIFIC CEMENT MAKING—HOW SLURRY ROSE FROM THE BARE VELD—DESCRIPTION OF QUARRY AND FACTORY.

Slurry lies 13 miles from Mafeking on the Krugersdorp Zeerust Mafeking railway line, about 35 miles from Lichtenburg. It owes its existence and activity to the fact that the most important Cement Works in the Union have been established at this place. The factory at Slurry was commenced by the Pretoria Portland Cement Company in 1915. At first one kiln was employed, but the plant was added to in 1919 and in 1920 and again last year and the factory is now equipped on a four kiln basis.

The Quarry.

The quarry from which the limestone at Slurry is derived consists of an enormous shallow open working, which has been opened out for several hundred yards, both in regard to length and width and to an average depth of about 20 feet. This admits of the proposition being worked in two 10 feet benches. Below the floor of the existing working the limestone continues in a harder and more dense form. The deposit has a thin top layer of overburden, which is carefully removed in Scotch carts and dumped at some considerable distance from the quarry. The limestone, much of which is of exceedingly fine-grained—almost impalpable—and high-grade quality, covers a very large tract of country in this locality. Outside the area of the existing quarry the continuity of the deposit and the maintenance of quality have been determined by numerous testing pits. Inside the quarry transport of the material to the main haulage track is effected by means of animal haulage. Rain water seldom occasions any trouble at the Slurry quarry, but this year the district, in common with nearly every other part of South Africa, has experienced very heavy rains, and at the time of our special Commissioner's visit, a week or two ago, some inconvenience was being experienced on account of there being accumulations of water in portions of the open working.



A portion of the Slurry Factory: Tall smoke stacks rising from what was mere barren veld a year or two ago.

Immense Quantities of High-grade Limestone.

The quantities of limestone at the Slurry works are so enormous that the question of "life" for the industry in this regard does not enter into the realm of practical politics. The quarry at Slurry lies about a mile and a quarter from the works, which are connected with it by haulage track.

The shale employed in making the cement is obtained from a quarry along the railway line, about 10 miles distant from Slurry works; while the gypsum which is introduced into the process, as stated further on in this article, is obtained from the Boshof and Warrenton district.

Methods of Manufacture.

The following is a rough outline of the progress of the various products from the workings through the factory until the final product of high-grade Portland Cement is manufactured.

The limestone is transported to the factory by endless rope haulage, and is first passed through crushers. The broken product is then transported by means of endless belts for preliminary grinding. There are four tube mills of standard Rand size in which the limestone is finally ground. The product from these is then elevated by an air displacement pump to large storage silos. In these silos the pulp comes into intimate contact with shale which has been passed through the shale mill, and is introduced into the process at this point.

The close admixture of the ingredients is attained by means of compressed air which is injected through the base of the silos into the pulp. The "raw mix," as it is termed, is then ready for burning, and is elevated by pumps to the kiln, where it is burned to incipient fusion. It is then passed through the Cooler and Pulverising Mills.

The Open Quarry at Slurry.

The two new kilns are each 200 feet in length and the old kilns are each 160 feet long. All four kilns were supplied by the Allis Chalmers Company. The Company has in all erected 5 kilns, viz., one in 1915, one in 1919, one in 1920, and one last year, but one of the older kilns has been dismantled and sold to the Cape Cement Works.

At the time of our representative's visit to the factory the other day, the new plant was practically completed, the only work of importance remaining to be accomplished being the new conveyor, which will mechanically transport and elevate the "clinker" to the storage tanks.

The burned product from the kiln is known as clinker. This is stored and seasoned for three weeks. The matured clinker then goes into the storage bins, where it is mixed with 3 per cent. gypsum. The clinker is then dealt with in two stages by finishing mills, wherein it is ground to extreme fineness. The product from these finishing mills is "finished" cement, which is transported to storage bins.

Additional plant for the mechanical elevation of the finished cement to the storage bins is now being installed and will be completed in the near future. From the storage bins the cement goes to the bagging machines, where it is automatically bagged and is then ready for the railway trucks which take it direct to the consumers.

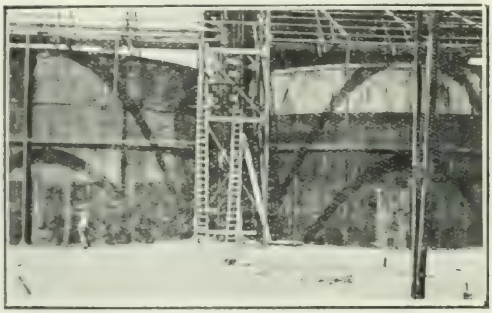
Concerning Bags.

The final operation of bagging is carried out by means of a Bates Patent Bagging Installation. The bags are initially sewn and cement is automatically pumped into them through a valve pocket in the end. The bags, each of which weigh 188 lbs., are then loaded into the railway trucks and then transported by means of the Company's own locomotive, which is of the old Z.A.S.M. type, along the branch line to the main railway at Slurry Station.

These bags are an important item. They are imported from India at a cost of about 1s. each. On each returned sack 6d. is allowed, but the experience of the Company is that customers take very little trouble in the direction of returning empty bags. The management of the Company would welcome a little more enthusiasm in this direction.

The Laboratory Aspect.

Good cement making calls for most careful and scientific analysis of the various components and the close checking of the product at different stages in its progress through the plant in order to obtain uniform quality. The Slurry factory possesses a thoroughly up-to-date laboratory scheme and staff. The composition and physical and chemical properties of the ingredients which enter into the manufacture of Pretoria Portland Cement are here most carefully tested, and if at any point in the process of manufacture the product does not come up to standard quality the man in charge of that particular department in question is at once informed of the fact and steps are then taken to rectify any errors in composition or fineness of material, etc.



New Elevators to Storage Bins at Slurry.

The Power Plant.

The whole factory is electrically operated. Slurry is equipped with a thoroughly modern and compact Power Plant with Generators, supplied by the General Electric and Allis Chalmers Companies. The steaming plant consists of six Babcock and Wilcox and Sterling Boilers, and the station generally can produce sufficient power to cope with all the needs of the factory as at present constituted.

Employees and How They Are Looked After.

Slurry is at present employing nearly 100 white men, of whom between 30 and 40 are on construction work, and from 400 to 500 natives. The open air work at Slurry makes a ready appeal to natives, and all the boys employed there offer their services voluntarily.

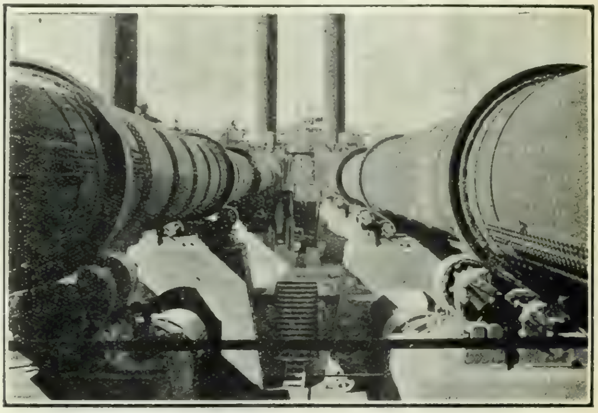
The welfare and contentment of European employees have been carefully studied.

For the white workers there are Tennis Courts, Swimming Bath, and Recreation Hall, etc., whilst housing arrangements for both married and single employees are admirable. As to natives, married boys are accommodated in well-built huts, whilst for other natives there is a well-laid-out compound.

What Slurry Means to the Country.

The Slurry plant has been laid out on a basis of ability to supply large quantities of high grade cement and to despatch this expeditiously to any part of the sub continent. The factory can, indeed, "ship" as much as 15,000 bags per day, and it maintains a reserve of 50,000 bags in its store. All over the sub-continent cement manufactured by the Pretoria Portland Cement Company, of which the Slurry Works are but a part, has been utilised, and everywhere it has given universal satisfaction. The Company has, indeed, despatched its products to as far away a field as Katanga in the Belgian Congo.

The operations of this Company have not only been of almost inestimable value to various branches of industrial activity all over Southern Africa, but the Company has also purchased, and is purchasing, large quantities of machinery, stores, and foodstuffs. It is giving direct employment at the present time to close on 170 white men and between 1,000 and 1,200 natives; and, furthermore, it is providing the railways with a considerable volume of very useful revenue. Prior to the erection of the works at Slurry, there was no traffic of any nature between Ottoshoop and Mafeking. To-day Cement Works call for constant quantities of coal and other material to be landed at the factory, and the trucks that bring these supplies to Slurry have valuable traffic in the form of bags full of cement to take away.



The new Kilns before being housed in at Slurry.

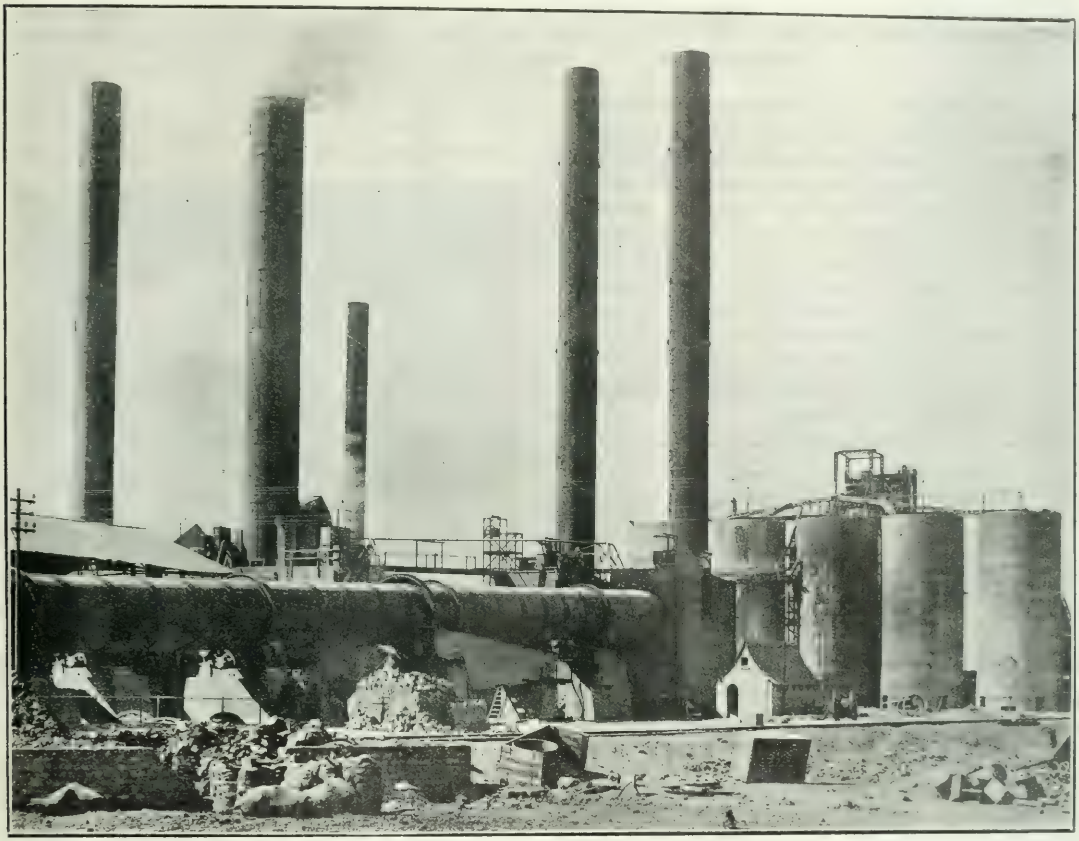
In Appreciation.

Slurry, like Hercules, and, as a matter of fact, the South African Cement Industry generally, owes much to the organising genius and technical mastery of the Pretoria Cement Company's Managing-Director, Mr. E. Davidson. Mr. Davidson has toiled day in and day out unceasingly to make the Cement Industry in South Africa a success, and particularly to make the factories and operations of the Pretoria Cement and Cape Cement Companies a success. That his efforts have reaped a rich measure of reward must be evident to anyone who has visited the factories in question, or has in any way travelled in history the not always rosy path of the Cement Industry in South Africa.

Cement in the Congo.

In connection with the suggested big hydro electric schemes of the Union Miniere du Haut Katanga. It has been proposed to utilise in the first place the Koni falls on the Lufira in order to develop a production in the first instance of up to 50,000 tons per annum. The execution of this project will call for the utilisation of large quantities of cement, and, for the manufacture of this, large works are to be established in the Katanga. There is reported to be an abundance of raw material in close proximity to a satisfactory site for a factory.

"The Cement Age."



New Kilns of the Pretoria Portland Cement Co. at their Slurry Works.

The Cement and Allied Industries of the Union.

VALUABLE STATISTICS.

The following official Government figures regarding cement factories and concrete works, etc., in the Union exhibit the present importance of these enterprises and show their industrial advance during recent years:—

Ccmparative Statements: Individual Industries, 1915-16 to 1920-21.

Date		No. of Establishments.	Value of Land and Buildings.	Value of Machinery, Plant and Tools.
			£	£
1915-16	... ...	15	97,842	331,021
1916-17	... ...	19	93,362	444,851
1917-18	... ...	23	108,649	507,557
1918-19	... ...	18	143,170	540,016
1919-20	... ...	27	129,914	541,490
1920-21	... ...	28	154,099	486,870

		Number of Employees				
		European		Other		
Date		Male	Female	Male	Female	All Races.
1915-16	...	148	3	760	3	914
1916-17	..	184	3	1,078	3	1,268
1917-18		226	4	1,201	3	1,434
1918-19	.	223	4	1,207	—	1,434
1919-20	...	287	2	1,792	—	2,081
1920-21	...	341	5	2,318	1	2,665

	Amount of Salaries and Wages paid to			Horse power of Engines and Motors	Cost of Fuel, Light & Power.
Date.	Europeans.	Other.	All Races.		
	£	£	£	H.P.—P.K.	£
1915-16	35,863	22,487	58,350	4,903	10,165
1916-17	41,565	29,469	71,034	6,580	15,093
1917-18	69,160	40,893	110,053	8,935	32,279
1918-19	75,545	48,148	123,693	8,165	34,704
1919-20	92,664	78,615	171,279	9,524	63,884
1920-21	123,140	98,290	221,430	8,333	64,870

	Materials Used			Value of Articles Manufactured or Produced and Work done	Value added to Material by Process of Manufacture or Treatment.
Date.	South African.	Imported.	Total		
	£	£	£	£	£
1915-16	54,142	30,955	85,097	270,129	185,032
1916-17	55,563	28,864	84,427	339,312	254,885
1917-18	69,351	40,716	110,067	477,107	367,040
1918-19	92,794	59,507	152,301	529,615	377,314
1919-20	142,912	116,253	259,165	816,497	557,332
1920-21	189,136	150,656	339,792	1,127,927	788,135

The Cape Portland Cement Works.

A FLOURISHING WESTERN PROVINCE INDUSTRY WITH A GREAT FUTURE—HOW SCIENCE AND ENTERPRISE COMBINE TO TURN LOCAL RAW MATERIAL INTO AN EXCELLENT FINISHED PRODUCT—VISIT TO PIQUETBERG DESCRIBED.

Despite the enterprising policy of publicity recently shown by the directorate, all too little is known of the activities of the Cape Portland Cement Co., Ltd., whose works are situated near Piquetberg, in the shadow of the Hex River Mountains. In the following brief account of a visit to the works an attempt is made to outline the magnitude of the undertaking, the broad gauge lines on which it is planned, and the thoroughness which characterises every stage in the production of the finished article. The Cape Province may well be proud of this example of successful and legitimate local industry.

Some 104 miles from Capetown, in the wide and once lonely valley of Piquetberg, are situated the far-flung works of the Cape Portland Cement Co., Ltd. The works are strung out in one long continuous line, while grouped around are the cottages of the workers. There is ample space for development, and every advantage is taken of it. At one end of the works is the quarry whence come the limestone and shale; at the other end of the works the ground cement is being stacked into bags and loaded into railway trucks. At the quarry some two hundred Kafirs are hewing the face of the rock, and the debris is being piled into trucks. Dynamite and steel are the only things that will deal with this rock, and it is plain that getting the limestone itself is one of the first big difficulties to overcome. Over five million tons of stone are available, basing on an average depth of fifty feet. But the deposit goes to a depth of at least 150 feet. Shale has to be mixed with the limestone during the crushing. Follow the raw product down the short railway where Kafirs launch the trucks of piled limestone to the crushing mills. Here the grinding and roaring of machinery really begins. Four hundred tons of limestone and shale daily are ground, which gives a mixture of approximately 75 per cent. carbonate of lime. The great machine that breaks limestone as easily as cheese is a No. 6 K. Allis Chalmers Gyratory Breaker.

Mr. J. L. Siddall,
Chairman, Cape Portland Cement Co., Ltd.

The Drying Process.

From this first crushing the mixture now passes to a rotary dryer, for it is essential that all dampness be removed before grinding the mixture to powder. Then it is tumbled,

View showing substantial nature of offices and housing provided for employees at the Cape Cement Works.

mechanically into another mill, which still further reduces it, and finally the rock limestone is reduced to a state of flour.

Storing the Powder.

All this powder is being shot into a huge storage bin, which holds no less than 750 tons at a time. When it is desired to convey the powder to the kiln for burning, variable mechanical feeders can regulate the supply. The kiln itself is a huge cylinder some 160 feet long and 9 feet in diameter revolving slowly and glowing at one end with intense heat. It is fired with powdered coal. By generating a heat of 2,700 degrees fahrenheit in the burning zone, the shale and limestone ingredients combine chemically and produce what is called cement clinker. The clinker is then discharged from the cooler. Kafirs are piling the clinker into heaps, where it is allowed to remain for several weeks. Then it is ground into the finished cement.

The Final Process.

It is this final grinding process that is the most difficult and most expensive. The clinker is in the shape of small pebbles, extremely hard cement, which is not to be ground into powder easily. Huge ball mills do this work. They are 8 feet in diameter and 5 feet in length, and are charged with 11 tons of steel balls of varying sizes, up to 5 inches in diameter. From these mills the cement is conveyed to the slug peb mills, 6 ft. diameter by 18 ft. long, charged with 25 tons each of "concarex." These mills grind it to a powder, and the finished cement is then ready for bagging and putting on the railway. So, in the space of 400 yards, the limestone is quarried, crushed, powdered, burnt, cooled and ground into the very finest Portland cement.

The Power Supply.

The power house contains boilers capable of generating 700 h.p., fed by chain grate stokers. Here are two 750 kilowatt Bellis and Marcom turbo alternators, of 2,200 voltage 3 phase 50 cycle and running at 3,000 revolutions per minute.

The Water Problem.

At the water cooling tower water, pumped from the Berg River some two miles away, is carried to an elevation of 600 feet, and cooled after it has served its purpose of condensing the exhaust steam.

The Laboratory.

At the laboratory two chemists work night and day regulating and testing the output.

The Workers.

The workers at the Cape Cement Works have their own cottages, store and post office. They live amidst some of the finest South African scenery, with the Hex River mountains as a background. There is a hospital for the natives, and everything is done to lessen the isolation which some of the workers may feel. Three miles away is the village of Piquetberg.

The photos reproduced herewith indicate the size and scope of the works and the style of dwelling provided for the workmen.

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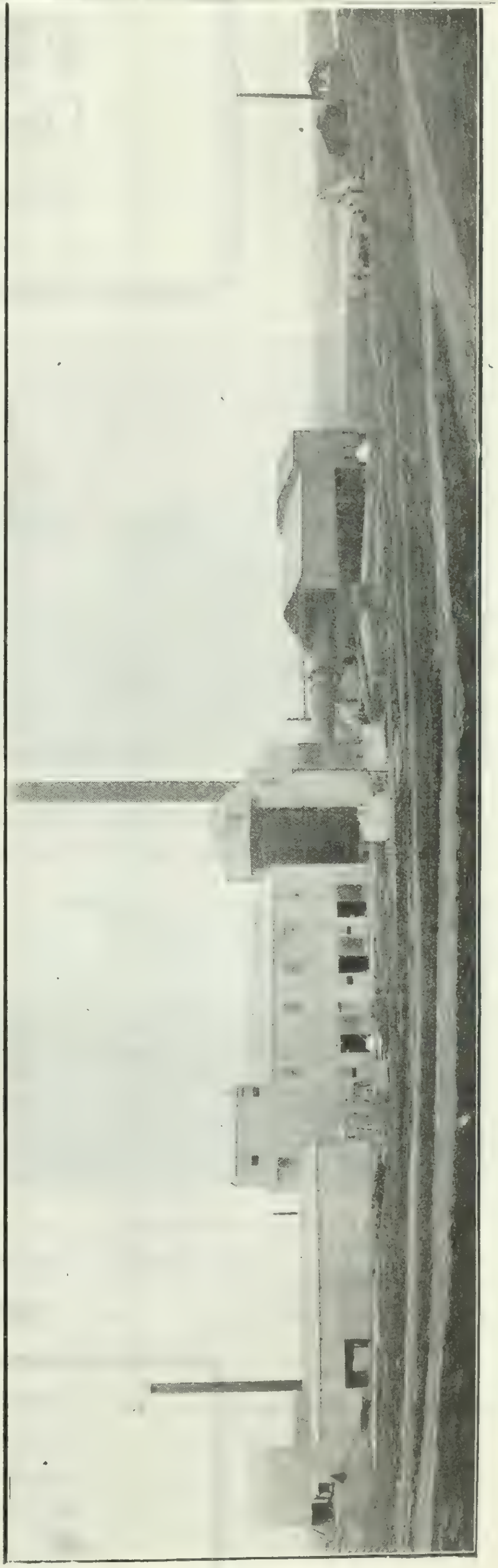

A view of a portion of the Works at De Hoek.

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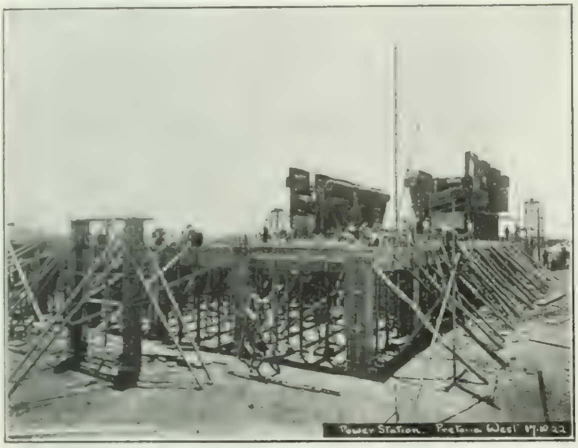

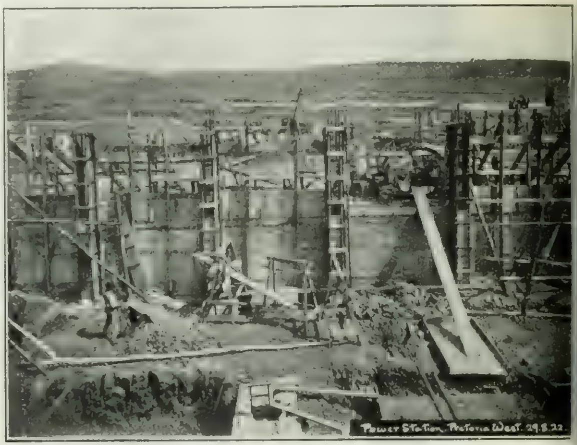

New Power Station Building, Pretoria West, for th
To the design of the Consulting Engineers to the Pretoria Municipality:—Contract

Factory Building, 2½ acres in area, at present under construction for T
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The Mozambique Portland Cement Company, Ltd.

DETAILS OF PLANT AND EQUIPMENT OF MODERN AND UP-TO-DATE WORKS.

The Mozambique Portland Cement Company, Limited, is incorporated in the Union of South Africa and is also registered in the Province of Mozambique, with administrative offices at Exploration Buildings, Johannesburg. The Company is establishing its works at Matola, about five miles from the City of Lourenco Marques, is connected by rail with the main line to the Transvaal, as well as by water to the Port of Delagoa Bay, as a matter of fact it is practically in the Bay of Lourenco Marques. It has large limestone and clay deposits at the factory site, as well as unlimited quantities of raw material at Salamanga. We understand that the Company has arranged for the purchase of a powerful tug and the necessary lighters for the transportation of the raw material from the latter.

The Plant.

The cement-making plant is manufactured by the well-known cement plant manufacturers, Messrs. George Polysius of Dessau, and this plant is now in course of completion under the supervision of the manufacturer's erection engineers.

The Power Plant has been supplied by The Brush Electrical Engineering Company, Ltd., Loughborough, England, and consists of a 1,100 k.w. Set Ljungstrom Turbine, running at 3,000 revolutions per minute, and with the energy generated by this plant 30 odd motors will be employed in the driving of the various machines. The erection is under the supervision of The Brush Company's engineer, Mr. A. Loving, M.I.E.E., M.I.E. (India). The Boiler Plant is by Messrs. Babcock & Wilcox, and is fitted with mechanical chain grate stokers, Green's economisers, water softeners, etc. The housing of the Cement Plant, which is 548 ft. long by 11 ft. wide, is of steel under iron, and is supplied by the Glasgow Steel Roofing Company, Ltd., whilst the Power Station and Boiler House are of brick under iron roof. Commodious and hygienic staff quarters have also been erected, whilst the most up-to-date laboratory is now in course of construction. A number of further dwellings for accommodating the staff are also now being erected. An innovation has been introduced in this part of the country as far as chimney stacks are concerned. The kiln chimney stack, which is 165 ft. high by 11 ft. at the base, is built throughout of reinforced concrete, and the power station chimney is also built of similar material and is 175 ft. high.

Nearing Producing Stage.

We understand that the whole of this plant is the most modern and up-to-date south of the Equator, and that the Company will be in a position to turn out a high-grade Portland cement within the next few months. Mr. J. W. Anderson, who has had extensive experience in various parts of the world in cement-making, is in charge of the Company's works and is being ably assisted by Mr. H. Struckel, the Resident Engineer. The Company has its own railway siding, also a private telephone line to Lourenco Marques.

The factory will have an output of 700 tons of Portland cement per week. The method of manufacture is upon the wet process. The limestone is fed to jaw crushers, 1,000 mm. by 500 mm., after which it passes through crushing rolls. This reduces the limestone to approximately walnut size. It is then elevated into a hopper over a compound ball and tube mill, 11 metres long and 1.8 metres in diameter. The clay, when delivered to the factory, is first dealt with in a wash mill, after which it is pumped into the compound ball and tube mill and ground with the limestone. Water is introduced into the grinding mill and the limestone and clay are ground together in the wet state (about 40 per cent. of water) to a fineness of about 10 per cent. on 180-mesh sieve.

The "slurry," as it is termed, coming from the compound ball and tube mill is elevated into one of three mixers, where it is thoroughly mixed and proportioned. One mixer is of sufficient capacity to enable the kiln to run over the week-end without refilling. The slurry transport and agitation is carried out in a special manner. Hitherto, slurry has been pumped by a plunger or centrifugal pumps, and agitated mechanically. In this factory, however, competely new methods are introduced, and the slurry is elevated by means of pressors and is agitated in the tank by means of blasts of compressed air. When found to be of correct proportions for calcining, the mixing tank is sealed and is used for the supply of the kiln. It is pumped into a small tank over the feed end of the rotary kiln and gravitates into the kiln. The kiln itself is 56 metres long and 2,800 to 2,300 mm. in diameter. The plates in the firing zone are approximately ¾ in. in thickness, and the kiln is furnished with four cast-steel rollers and a cast-iron rim for the drive. The cooler is attached to the kiln in prolongation. This attachment permits of several advantages, notably, only one motor to drive, instead of two where the cooler is separate; much lower foundations; absence of stairs, gangways, etc., and perfect accessibility and easy attendance. Furthermore, no movable kiln head is required; and a considerable saving through the utilisation of heat radiated from the material passing through the cooling section is effected.

Coal is supplied to the kiln in the following manner: When delivered to the factory, by trucks run in on the Company's siding, the coal is first crushed and thoroughly dried in a rotary drier. It is then passed through a small compound ball and tube mill, 8 metres in length and 1.4 metres in diameter. It is then elevated into a storage hopper, from which it is wormed into the coal feed pipe through which a continuous blast of air passes by means of a high pressure fan. The clinker coming from the cooler is taken on a shaker conveyor to the boot of an elevator, which elevates on to another conveyor running over the whole length of the clinker store. Sufficient storage has been allowed for four weeks' output at the rate of 1,400 tons per week (the factory is so designed as to permit of duplication in the near future). The clinker is reclaimed by a conveyor running underneath the clinker storehouse, and after the gypsum has been added is elevated over a compound ball and tube mill for clinker grinding. The cement is ground to a fineness of 8-10 per cent. on 180-mesh sieve, and is wormed and elevated into the cement store, where automatic sack-packing machines have been provided.

In every direction we find that labour-saving appliances have been introduced, and with an abundance of material, cheap coal, cheap, efficient labour and expert management, it will be seen that the Company will be in a position to manufacture the highest grade Portland cement, of uniform quality, at a price to defy competition.

Anybody visiting Lourenco Marques should not fail to visit these works as it is only about 20 minutes' run on a well made road from Lourenco Marques. It is gratifying to note the industrial development taking place in the Mozambique Province, and the Cement Company is without a doubt the biggest undertaking in our neighbouring territory.

White's South African Cement Company, Limited.

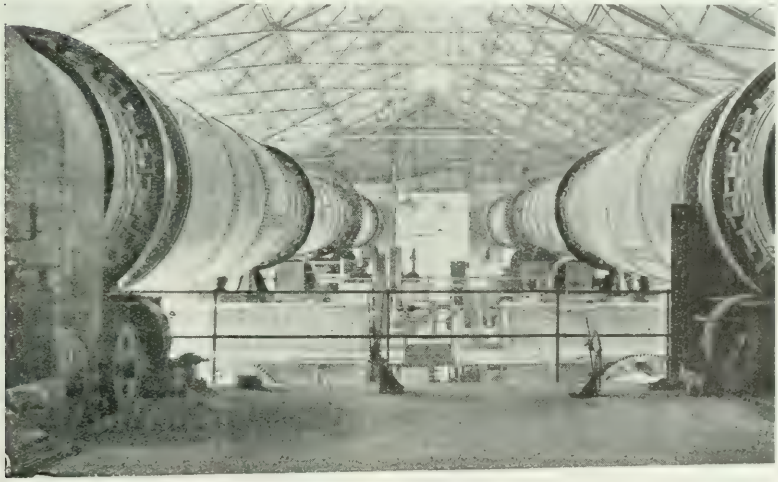
EQUIPPED WITH FINEST PLANT PROCURABLE—AN IMPORTANT FREE STATE INDUSTRY.

The Factory is situated at "White's," near Ventersburg Road, O.F.S., thirty miles south of Kroonstad on the main line to Capetown.

It was completed and started producing Portland Cement towards the latter part of 1914. The factory was equipped with the finest plant procurable, the result being that it is one of the most complete and up-to-date Cement Works in the world.

The Company is subsidiary to the two big English Portland Cement Companies, i.e., the Associated Portland Cement Manufacturers and British Portland Cement Manufacturers, Ltd., under whose supervision this South African factory was designed and erected. The practical experience gained by the parent companies over the past hundred years, combined with the benefits derived from the most modern research work, are utilised to advantage in their South African project.

White's Cement Factory, Ventersburg Road, O.F.S.: A General View.



Rotary Kilns at White's South African Cement Factory.

The method of manufacture adopted was the "wet process," which ensures absolute uniformity of quality. Two rotary kilns have been installed and the capacity output of the factory is 850,000 bags per annum. The product is not only guaranteed to exceed the requirements of the British Standard Specification, but the tests made over a long period prove it to be equal in all respects to the famous English brands manufactured by the parent companies.

The factory is most centrally situated for supplying the requirements of the whole of the Union. The Company is supplying extensively the large Irrigation and Waterwork Schemes, Government Grain Elevators, Railways and Harbours, Public Works and other Government Departments, Collieries, Contractors, Explosives Factories, Mines, Municipalities, Sugar Estates, and General Consumers throughout the Union.

The business is administered from the Johannesburg office, to which all communications should be directed.

The Company has published some very useful books, entitled:—

(1) "Everyday Uses of Portland Cement."
(2) "Reinforced Concrete."
(3) "Concrete Cattle and Sheep Dipping Tanks."
(4) "Concrete Silos."
(5) "Concrete Roads and Kerbs."
(7) "Simple Concrete Uses."

Copies will be supplied, free of charge, on application to P.O. Box 2484, Johannesburg.

The Head Offices of the Company are at 47-49 National Bank Buildings, Simmonds Street, Johannesburg; and the Works are situated at White's, near Ventersburg Road, O.F.S.

Cement: Its Definition and Local Trade Aspects.

PROTECTION FOR THE LOCAL INDUSTRY—SOME REMARKABLE FREIGHT FIGURES.

What is Portland cement? The following semi-technical definitions of Portland and other varieties of cement may suitably introduce readers to this Special Supplement on the Cement Industry of South Africa, its Statistics, Technology and Trade. In this preliminary article, too, some attempt is made briefly to indicate the volume and value of the cement industry in other parts of the world, and to show what recent progress has been made in the manufacture of this vastly useful and, in fact, indispensable commodity of modern life.

First, then, as to the definition. We find in a modern dictionary the following:—

> Cement stone, n. Any stone from which cement may be manufactured, as the limestone from Rosendale, N.Y.—hydraulic cement, any cement, as Portland cement, that sets under water. Iron cement, a pasty mass of powdered iron, sulphur, and sal ammoniac used for iron joints and seams. Portland cement, a hydraulic cement made by calcining limestone with clayey matter, as chalk and river mud. Roman cement, a quick-setting cement, made by burning nodules of hardened clay containing lime and iron, and mixing the result with lime and sand.

Cement is one of the most extensively employed of modern commodities, and it would be tedious to state its many uses here. It may, however, be pointed out that amongst the more important uses to which cement has been put, and is being put, in South Africa during recent years are buildings, mining and engineering structures, harbour and railway work, dams and irrigation projects, grain elevators, etc., etc.

In the following articles we are concerned with Portland cement only, and where the word cement is used it will imply this variety of the article.

Position of Cement Industry To-day.

The position of the cement industry in the Union to-day is that there are four factories producing cement, viz.: (1) Pretoria Portland Cement Co., Ltd., Pretoria; (2) Pretoria Portland Cement Co., Ltd., Slurry; (3) Whites S.A. Cement Co., Ltd., Ventersburg Road; (4) and the factory recently erected at De Hoek, near Piquetberg, Cape Province, by the Cape Portland Cement Co., Ltd.

The producing factories are capable of turning out approximately 4,250,000 bags of cement per annum, equalling 2,125,000 casks.

Owing to slackness of trade, the working factories are at present manufacturing at the rate of a little over two million bags per annum, or only about 50 per cent. of what they are capable of doing.

The Slurry factory of the Pretoria Company stopped production of cement from 5th November, 1921, to 27th March, 1922, and is now running only two out of the four kilns available. Whites S.A. Company factory has been operating at about half capacity for some time past.

On account of the curtailment of operations referred to above, a considerable number of European and native employees have been thrown out of work. Furthermore, there will have been a great falling off of railway revenue on account of the reduced traffic in cement raw materials, coal and general goods.

Whilst this condition of affairs was prevailing, large quantities of foreign cement were landed in the country, the major portion of which has been used at or near the ports of the country, therefore producing very little revenue to our railways.

The protection duty amounts to 1s. 3d. per cask (one cask = two bags), with a rebate of 3d. per cask in respect of British cement.

Recently, Parliament has introduced legislation which is designed to give the local cement industry a still greater measure of protection in the shape of a "dump duty," of which it stands in dire need.

This "dump duty," applied to British, Danish, Norwegian, and Belgian cement, but Sweden and Germany have been excluded up to the present, and in view of the present position of Germany there is not much fear of any serious competition from that country. That this protection was urgently needed will be evident from the fact that South African railway rates for cement to-day are 29s. 10d. per long ton from Slurry or Hercules to any coast port. On the other hand, the ocean freight charge is *12s. 6d.* per long ton from any European port to Capetown. This is the scheduled rate, but in point of fact shippers can probably get lower rates. This rate cannot be remunerative to the shipping companies, and South African Railways cannot compete against it. The shipping companies are cutting freight rates on European cement to an almost astonishing degree. The lowest pre-war cement rate was *15s.* per ton, and all other rates are up. *In this connection it is of interest to note that English cement is quoted for export to the Gold Coast at 11s. 6d. per cask, f.o.b., and to South Africa 7s. 6d.*

From Slurry to Capetown is 883 miles. The railage cost for cement over this distance is 30s., as against 12s. 6d. for 6,000 miles from England to Capetown. The railage from the new Cape cement works to Capetown, 104 miles, is 13s. 5d., or almost 1s. per ton more than the rate from Southampton to Capetown.

The only inference one can put upon these remarkable figures is that a desperate attempt is being made by overseas cement interest to capture the South African trade.

The following figures, showing imports of foreign cement into the Union, are furnished by the Customs Statistical Bureau:—

Year	No. of Casks (1 cask = 2 bags).	Value.
1921	181,483	£153,552
1922	248,376	117,419

It will be observed that imports have been increasing, and with reducing prices for foreign brands the position of the local companies is becoming worse as time progresses.

The Union factories, with large stocks of cement on hand and with a substantial reserve in their producing capacity, could readily have supplied the country's requirements of cement from January, 1921, to date, and this would have been of advantage to the community, in that:—

(*a*) The money would have remained in South Africa.

(*b*) The Government would have derived greater revenue in the shape of taxation, railway revenue, etc.

(*c*) More employment would have been provided for skilled and unskilled workmen at the cement works, collieries, etc.

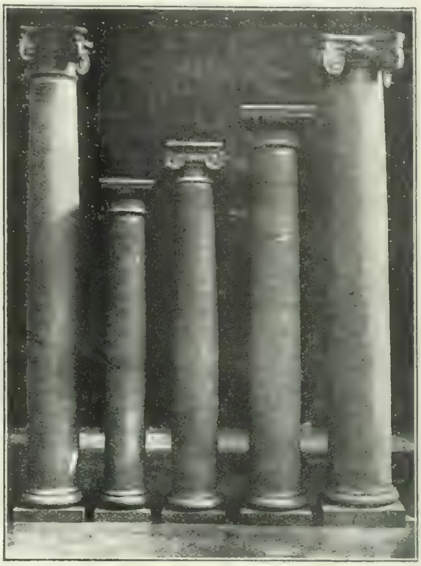
The locally manufactured cement is in every way equal in quality to the best overseas brands, and the output is sufficient to meet all demands. There is consequently no occasion for any imported cement to reach our shores.

No Profiteering.

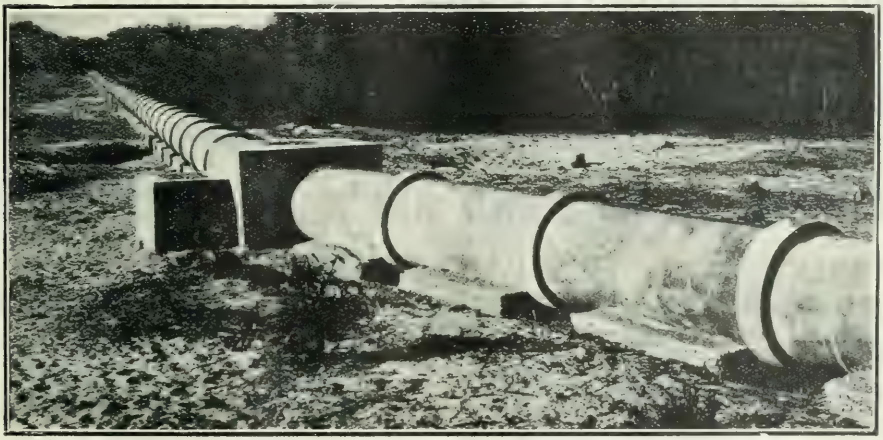
The prices of South African cement have been reduced appreciably during the past twelve months, and on a f.o.r. works basis, compare favourably with prevailing rates overseas. The present price for Pretoria and Whites S.A. cement for delivery to the ports is 4s. 6d. per bag, f.o.b. works, or the same as in June, 1914.

The Varied Products of the Hume Pipe Company.

" **HUME** " Reinforced Concrete Fencing Posts.

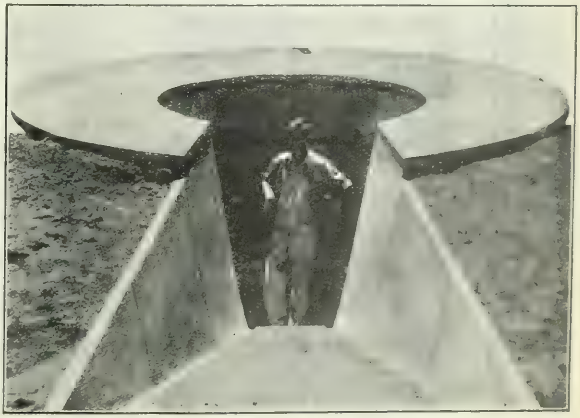


" **HUME** " Concrete Verandah Columns.



30-inch Pipe Line at Wynberg, C.P.

View of the " **HUME** " Company's Pipe Yard and Factory.



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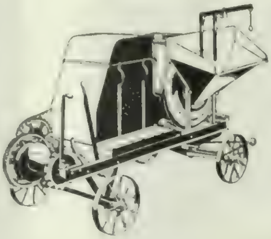

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The Pretoria Works as the Pioneer of the Cement Industry.

THE PIONEER ENTERPRISES—HOW THE INDUSTRY HAS GROWN.

The pioneer concern of the cement industry in the Transvaal, and in fact in South Africa, was a company which was registered and commenced operations in 1892 under the style Eerste Cement Fabrieken Beperkt, which name was later changed to First Portland Cement Factory, Ltd., and then again to Pretoria Portland Cement Company, Ltd.

The first factory was established just outside the Pretoria municipal area, at Hercules, and operations are still being carried on on the same site.

The output of the original works was approximately 2,000 bags per month, and, under heavy protection from the Republican Government, the selling price of cement was then something over 20s. per bag at the works. However, owing to high costs and antiquated methods of manufacture, the business was not a paying one. The industry therefore made no progress and was really on the verge of collapse.

In 1904 the first rotary kiln was introduced at the Pretoria works, with a monthly production of approximately 15.000 bags of cement.

A second rotary kiln was installed in 1910 and a third in 1914.

In 1915 the company commenced the erection of a new factory at Slurry, in the Marico district, 13 miles from Mafeking, on a one-kiln basis. Further kilns were added as follows:—

One in 1919.
One in 1920.
Two now in course of erection.

The first Pretoria kiln was discarded and one of those from Slurry dismantled and sold to the Cape Portland Cement Co., Ltd., for their works at De Hoek, near Piquetberg, so that now the capacity of the Pretoria company is represented by two kilns at Pretoria and four at Slurry, with a combined output of, say, three million bags per annum.

The following figures indicate the progress achieved by the Pretoria company since its inception.

Production of Cement.

1892	21,000	bags.
1905	98,460	,,
1909	172,200	,,
1910	404,861	,,
1913	692,600	,,
1914	827,110	,,
1917	939,767	,,
1920	1,593,200	,,
1921	2,007,000	,,
1922	—	

Up to 1913 the business of the Pretoria company was practically confined to the Transvaal and Free State, which absorbed the whole output, and nothing much was done to foster trade in the Cape and Natal Provinces. After the strikes in 1913 and 1914 business locally had a severe setback. and they then commenced their first serious campaign to capture trade at and near the ports.

The advent of this progressive Transvaal company was not welcomed by certain of the coastal merchants, several of whom had up to that time practically controlled the cement markets at the ports, no doubt to their material financial advantage. However, the Pretoria company was able to interest a number of firms in the local product and were securing a fair measure of success when the war broke out. In this the Company was assisted to a great extent by favourable railway rates, the railway charges ranging from 1s. 3d. to 1s. 5d. per bag from the inland factories to the ports.

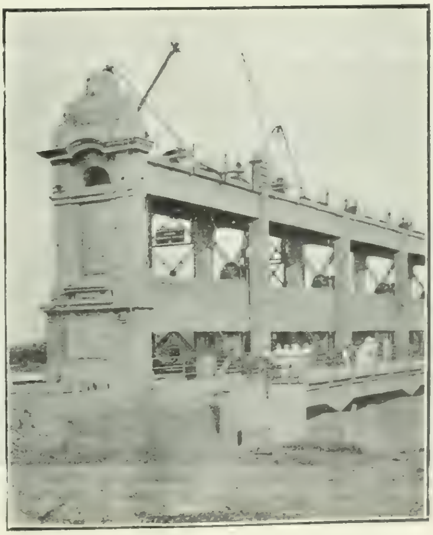
Just before the outbreak of the European war, White's South African Cement Co., an offshoot of the famous English cement manufacturers, installed a modern and thoroughly efficient factory at Ventersburg Road, in the Orange Free State.

During the war period overseas cement was not procurable in South Africa, and the whole of the country's demands were then diverted to the local factories. At this time boom conditions were prevalent in the building trade, and manufacturers were overwhelmed with orders which could not be executed in reasonable time.

These conditions presented an excellent opportunity for increasing profits at the cost of consumers, but the cement producers were not tempted to depart from their policy of supplying at a reasonable figure, with the result that over an extended period South Africa was obtaining cement at prices much below the world's ruling rates, which was unique so far as South African manufacturers were concerned. A certain amount of profiteering on the part of third parties did take place, but in all cases that were brought to the notice of the cement producers and proved they stopped supplies to those concerned, and by this means reduced the evil to a minimum. It was at the Pretoria company's suggestion that exportation of cement from the Union was prohibited, although this business offered excellent opportunities of increasing profits at the expense of foreigners.

Had it not been for the Pretoria company's foresight and enterprise in erecting the Slurry factory during the war period, the cost of production on pre-war scale of operations would have been so high that selling prices could not have been maintained at the low figure which prevailed.

The great demand for cement during the war, and particularly during the boom time of the post armistice period, induced others to commence cement enterprises in localities where raw materials were available in proximity to railways and in districts favourably circumstanced with regard to trade. During this period the Mozambique Portland Cement Co. was floated, and commenced the establishment of a factory near Delagoa Bay. Efforts were made also to establish a cement factory in the vicinity of Port Elizabeth, whilst in Rhodesia a cement works was established not far from Bulawayo, and in the Belgian Congo the erection of a large cement factory in the Katanga has been under consideration by the Union Miniere and its associated enterprises for a considerable time.



Concrete Construction as exemplified at Vaal River Barrage.

The Cement Industry in Rhodesia.

FACTORY NEAR BULAWAYO—PARTICULARS AS TO PRODUCT.

A small cement factory has been in operation near Bulawayo for about six years, but was closed down some little time ago on account of general trade depression.

The process of manufacture throughout is very carefully supervised so as to ensure an even grade product. With the exception of some trouble in the early stage of manufacturing, this result has been regularly achieved. The raw material is automatically mixed and the mixture analysed every hour, and it can be safely stated that, from the precautions taken, a first-class graded cement is regularly turned out.

It would seem to be equal in all respects to the best British imported article, and there appears to be no longer any justification for the use of the latter.

The following gives a fair average of results of tests and a comparison of its qualities with the British standard specification for cement:—

Neat Cement.

Date	Tensile Strength 7 days	Tensile Strength 28 days	Residue on Sieve 180 x 180	Initial Set	Final Set	Expansion Le Chatelier
April 17 1918.	584 lbs.	644 lbs.	3%	45 min.	4 hours	2 mm.
British Standard March	450 lbs.	540 lbs.	14%	Over 30 min.	Over 3 hours, under 7 hours.	10 mm.

(Faiga Hot Water Test—Sound.)

The cement is sold in bags containing 187½ lbs.; thus two bags equal the contents of one cask as supplied by British manufacturers.

The finished cement is regularly subjected to all the tests required by the revised British standard specification for Portland cement, and the Faiga hot water test is also employed in addition.

On several occasions cement has been condemned when the actual fault lay not in the cement but in the other materials used. To ensure good and sound work the stone and sand used must be thoroughly clean. The ordinary river sand in this country, which looks quite clean and does not stain the hands when picked up, contains as a rule a fairly large quantity of alluvial soil. This can easily be proved by washing a little in a pan. The broken stone used in concrete work should also be washed clean of any adhering soil or dust, as otherwise sound work can hardly be expected.

The price of local cement has not been affected by the war, and it is believed that a more extended use of it might be profitably made than is done at present.

Local Utility.

The following, among many others, are some examples of its profitable utility:— Sheep and cattle dips, cow sheds, stable and stock yard floors, cess pits, silos, foundations, fencing and telegraph poles, pavements and floors, kerbs and street guttering, dams, pipes and culverts, water, cyanide and other tanks, pig styes, troughs, etc., etc.

Pipes of large diameter and culverts can be made more cheaply of reinforced concrete than of steel.

A concrete floor can be put down at less than the ordinary wooden one. Failures with concrete floors sometimes occur, but in the large majority of cases these are due to settlement underneath. If before the floor is laid the ground is thoroughly well rammed, there is no danger of failure even with a comparatively thin floor. This is assuming, of course, that a proper mixture of concrete is made.

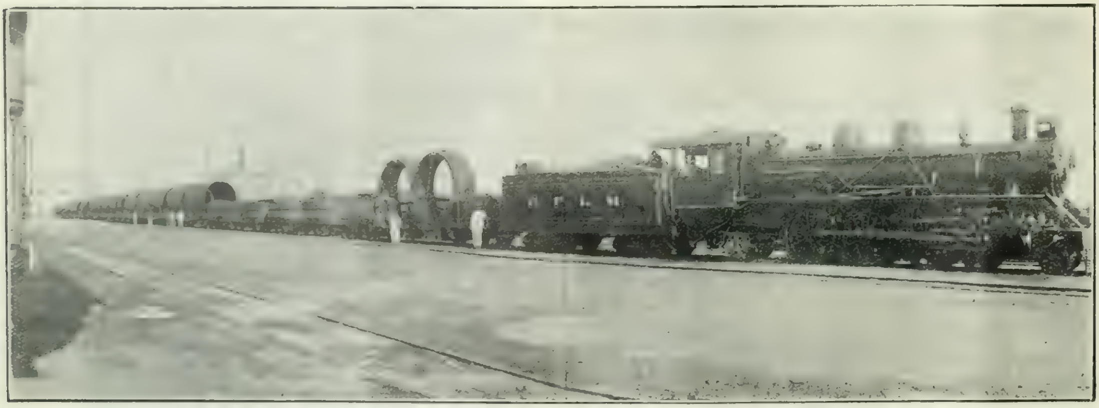
Concrete floors give full protection from white ants if laid in a continuous sheet before the walls of a house are erected. In such cases the concrete should extend beyond the walls outside.

For necessary and healthy ventilation a few air bricks are essential just above the floor.

Large tanks made of reinforced concrete can be constructed at a less cost than steel tanks. This refers particularly to cases where skilled labour is already available on the site and where timber for moulding can either be used for other purposes after the tank is completed or can be used for a number of successive tanks. Such tanks are easy to keep clean, and compared with steel are practically everlasting.

Native and white quarters have been constructed very cheaply by using ordinary cinders and cement—proportion, 10 cinders, 3 sand and 1 cement. The walls are usually six inches thick and are floated off in a mixture of 3 sand and 1 cement.

The foregoing information is abstracted from the report of the Rhodesia Resources Committee.



This photo gives an idea of the amount of machinery required by one of the kilns at the Slurry Works of the Pretoria Portland Cement Company, Ltd.

The Week in the Sharemarket.

FIRM CLOSING FOR THE HOLIDAYS—NEW CAPITAL-RAISING SCHEMES WELL RECEIVED—OUTLOOK FAVOURABLY REGARDED.

Although business has become rather restricted owing to the Easter Holidays, the market closed firm. The Anglo-American Group have provided most of the features during the past week, and the continued buoyancy of their shares is restoring some confidence. There are many interesting features in the market which will no doubt become more concrete when business is resumed after the recess. Meantime, the House is closing until Tuesday. The financial schemes of West Springs and New State Areas are now before the public, and both offer attractive features. Next week the Brakpan circular regarding the issue of 170,000 shares will be out. Modder B alone have been disappointing. However, the very extensive development policy now being adopted at this mine will help put matters right, and it must not be overlooked that there is still a good life before the mine on present values. Reports of excellent development continue to come from Crown Mines. Diamond shares have been the medium of large business, notably Consolidated Diamonds, which have improved. Labour troubles are said to have retarded work for some time, but the position is now better and larger profits are being looked for. Angola Diamonds will shortly be on the market. Montelees have attracted some attention as a small gamble, with a resultant advance in price. Industrials and Oils have been very quiet. African Oils had sales at 3s. 3d. There has been a fair turnover in Banks and Loans for investment. Reserve Banks have recovered their nervous drop of last week and are now being bought. For the future a better money position is looked for. It is expected that the outcome of the Currency Bill will be relief in exchange rates, which will greatly facilitate market dealings both here and in London. A more optimistic note than usual was sounded by the Chairman of the Chamber of Mines at the annual meeting, and the Budget utterances at Capetown are also more hopeful. In view of the various programmes before the mining houses now, and the probability of an easing exchange position, more activity may be looked for shortly in the market.

	Fri. 23rd.	Sat. 24th.	Mon. 26th.	Tues. 27th.	Wed. 28th.	Thurs. 29th.
Anglo-Am. Corp.	26 0	25 10½	25 10	25 9	25 6*	26 0
Apex Mines	6 0*	6 3*	6 0*	6 0*	6 0*	
Aurora Wests	6 0†		6 0†	6 0†		
Brakpan Mines	68 6*	68 9*	68 9*	68 6	67 6*	68 6*
Bushveld Tins	0 4*	0 3*	0 4*	0 3*	0 3*	0 3*
Cinderella Cons.	3 6*	4 0†	3 6*			3 6*
City and Subs.					—	2 10*
City Deeps	48 3*	48 0*	48 6*	49 0	48 0*	48 6*
Clydesdale Colls.	17 6†	17 6†	17 6†			17 6†
Con. Diamonds	22 9	22 6	22 9	23 3	23 3	24 1½
Con. Investments	29 0*		29 6			
Con. Langlaagtes.	13 6*	13 0*	13 0*	13 0*	13 0*	13 0*
Con. Main Reefs	11 3*	11 3*	11 3*	11 8*	11 3*	11 1*
Coronation Freeholds.		0 8*	0 8*	0 8*		0 7*
Do. Syndicates	8 1	8 1	8 0	7 9	7 3*	7 1*
Crown Diamonds	6 10*	6 11†	6 9	6 9	6 8*	6 9
Crown Mines	55 3	54 6	54 0	54 3	54 3	54 6
Daggafontein Mines.	3 4*	3 4	3 3*	3 3*	3 3*	3 4*
East Rand Coals	1 4*	1 7*	1 6*	1 4*	1 4	1 4*
East Rand Deeps		1 0†	1 0†		1 0†	1 0†
East Rand Minings				9 6*		9 0*
East Rand Props.	7 3*	7 1*	7 0*	7 1	7 1	7 0*
Eastern Golds	0 6*	0 6*	0 6*	0 6*		0 6*
Ferreira Deeps	7 6	7 3*	7 3*	7 3*		7 3*
Frank Smith Dmds.	4 2*	4 2	4 1*	4 1*	4 2	4 1
Geduld Props.	61 9*	61 3*	61 3	61 6	61 9	61 3
Glynn's Lydenburgs.	13 6*	13 6*	13 6*	14 0	13 6*	13 6*
Govt. Areas	103 6	103 6*	103 6*	105 0*	105 3	105 0
Hume Pipes	8 0*	8 0*	8 0*	8 3*	8 0*	8 0*
Knights Centrals	5 1*	5 0*	5 2	5 2*	5 3†	5 0*
Lace Props.	9 0*	9 0*	9 0*	9 0*	9 0*	9 0*
Langlaagte Est.	20 0*	20 0*		20 0*	20 0*	19 6
Leeuwpoort Tins	4 10	4 10	4 9	5 0†	4 6	4 0
Luipaardsvlei Est.	3 9*					
Lydenburg Farms	3 3*	3 4	3 4*	3 4		
Meyer and Charltons	71 0†		72 6†	71 6†		
Middelvlei Est.	2 0†	1 6*	2 0†			—
Modder B.'s	26 3*	26 3	26 6	25 9	24 6	25 0

	Fri. 23rd.	Sat. 24th.	Mon. 26th.	Tues. 27th.	Wed. 28th.	Thurs. 29th.
Modder Deeps	43 3	43 6	43 3	43 0*	43 6	43 6
Modder Easts	8 3	8 0*	8 0*	7 10	7 8*	7 0*
Natal Navig. Col.	27 3†			27 9		
National Banks						£8 18 9
New Eland Dmds.	45 0		47 6†	44 3	44 6*	47 6†
New Era Cons.	6 9*	7 3*	6 9*	6 9		6 9*
New Geduld Deeps			2 6*	2 6*	2 0*	1 9*
New Modders	78 6*	78 6*	78 6*	78 3	78 6	78 7½
New Kleinfonteins	5 6	[illegible]	[illegible]	[illegible]	[illegible]	5 0*
New Primrose	3 6*		[illegible]	[illegible]		
New State Areas	40 0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 6*
Nigels	7 6*		[illegible]	[illegible]	[illegible]	[illegible] 6*
Nourse Mines	15 3*	15 6*	[illegible]	[illegible]	[illegible]	15 6*
Pretoria Cements	42 6	42 9	42 6*	42 6*	42 6*	[illegible] 6*
Rand Collieries			1 [illegible]	1 6	1 6*	1 6*
Rand Nucleus	0 10*		0 10*	[illegible]	0 10*	
Randftn. Centrals	14 9*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 6†
Do. Estates	23 9	23 [illegible]	23 [illegible]	23 [illegible]	23 3	23 3
Rouxville Dmds.	1 [illegible]	1 4	1 4*	1 [illegible]	1 0*	1 4*
Roberts Victors	9 [illegible]	9 0*	[illegible]	[illegible]	[illegible]	9 0*
Robinson Deep A	31 [illegible]	[illegible]	31 9	[illegible]	[illegible]	[illegible] 0
Robinson Deep B		12 [illegible]	12 [illegible]	[illegible]	[illegible]	12 0*
Rooibergs	—	5 0†	[illegible]	[illegible]	[illegible]	[illegible]
Ryan Nigels	3 [illegible]				3 6*	—
[illegible]	3 3*	3 4*	3 4	3 4	3 4*	[illegible]
S.A. Breweries	28 [illegible]	28 [illegible]		28 [illegible]	28 [illegible]	28 6*
S.A. Lands	5 4*	5 6	[illegible]	[illegible]	[illegible]	5 7*
S.A. Reserve Bank	£136*	£138*	£138*	£139*	£140†	£141†
Springs Mines	49 0	[illegible]	[illegible]	48 9*	48 9*	48 9*
Sub Nigels	9 10	9 7	[illegible]	[illegible]	9 [illegible]	9 9*
S.A. [illegible]	15 9*	16 3*	[illegible]	[illegible]	[illegible]	[illegible] 9*
S.A. Townships	[illegible]	[illegible]	[illegible]	9 9	9 [illegible]	[illegible] 0†
Transvaal Lands			[illegible]			
Transvaal G.M. Est.	8 9	8 6*	8 6	8 6	8 6*	8 6*
Transvaal Silvers.	13 6	13 3*	13 6	13 6*	13 0	12 0*
Tudors	0 3*	0 3*		[illegible]		0 3*
Union 5 per cent.	£103*	£103*	£104*	[illegible]	[illegible]	[illegible]
Van Dyks	1 4*	1 4*	1 4*	1 6†	1 6†	1 6†
Van Ryn Deeps	69 [illegible]	69 9	69 6*	69 6*	69 6*	69 6*
Van Ryn Estates	15 6	—	15 0*	15 6*		
Village Deeps	13 6*	13 9	13 9	13 6	13 9*	[illegible] 6*
West Springs	19 4½	19 6	19 6	19 0	19 6	18 1½
West Rand Cons.	7 6†	7 6†	6 6†	6 6†		7 0†
Western Rand Est.	3 9*	[illegible] 6*	3 6*	3 11	3 9*	3 9
Witbank Colls.	30 0*	30 [illegible]	30 0	30 6*	30 6*	30 6*
Witwatersrands				16 [illegible]	—	[illegible] 9*
Wit. Deeps	16 3*	16 6*	16 0	16 0	16 0	[illegible] 9*
Zaaiplaats Tins	3 6	3 10	3 10	4 0	4 6*	4 0*

* Buyers. † Sellers.

Magadi Soda Troubles.

In the Chancery Division in mail week, before Mr. Justice Romer, Mr. Vaisey, on behalf of the Trust Union, Ltd., applied for the appointment of a receiver and manager of the Magadi Soda Company, which has a capital of £1,812,500. Mr. Vaisey stated that the plaintiff company held £5,000 out of an issue of £500,000 First Debentures in the Magadi Soda Company, and that the principal moneys became due upon a notice by the directors that it was the intention of the company to cease to carry on its business. The company had entered into large contracts which it was necessary to carry out. Counsel for the respondent company and other parties interested consented, and his lordship appointed Mr. Andrew Wilson Tait, chartered accountant, Basildon House, E.C., receiver and manager. The company, of which Mr. Samuel Samuel, M.P., is chairman, has £1,312,550 share capital issued and paid up, £62,500 representing 1s. deferred shares. There are also £499,950 of debentures outstanding, which were dealt in recently at 56. The accounts for the year 1921 revealed a debit balance of £167,059, including £54,571 for depreciation. The directors in their report stated that advices had been received from Kenya that the dredger specially designed for the excavation of raw soda from Lake Magadi was operating successfully, and they expressed confidence that a substantial increase in output and economy in cost would result.

Rose Deep Outlook.

REDUCED PROFITS AND LOWER WORKING COSTS.

The annual report of the Rose Deep shows a large decrease in profit mainly due to the fall in the price of gold, which, compared with the previous year, resulted in a decline equal to an average of 1s. 1d. per ton milled. The general strike of white employees on the mines of the Witwatersrand during the early part of the period under review and the consequent dislocation of operations also had a serious effect on the profits obtained. No useful comparison can therefore be made with the operations of the preceding year. During the past three months direct losses were incurred totalling £29,8[illegible], and the resumption of normal operations was delayed until about July, owing to a large number of the Company's native employees having taken their discharges during the strike. The beneficial effect of the reorganisation of underground work carried out after the conclusion of the strike is reflected in the lower working costs ruling during the last six months of the year. The ore reserve shows a decrease of [illegible] tons with an increase in value of 0·2 dwt. per ton. For reasons given in the consulting engineer's report no improvement in the grade of ore milled can be anticipated. The concentration of reduction operations at the Western plant and the installation of the [illegible] central pumping plant on the property of the [illegible] Mines, Ltd., have been completed. A sum of £[illegible] has been provided out of working costs during the year to meet this latter expenditure.

CONSULTING ENGINEER'S REPORT.

The following tabulation summarises the salient features of the work of the past three years:—

	1920.	1921.	1922.
Tonnage milled	643,000	644,500	502,460
Working costs per ton	21s. 2d.	22s. 0d.	20s. 4d.
Revenue per ton with gold at 84s. per oz.	21s. 5d.	20s. 7d.	20s. 10d.
Working profit per ton with gold at 84s. per oz. ...	3d.	1s. 5d.*	6d.
Working profit with gold at 84s. per oz.	£8,062	£45,931*	£14,975
Additional revenue represented by difference between 84s. per oz. and actual price realised	£213,016	£168,858	£36,250
Total working profit	£221,078	£124,907	£51,225
Development footage	7,050	7,077	6,874
Ore reserve, tonnage ...	3,060,040	2,564,430	2,128,800
Average value of ore reserve, dwts. per ton	5·1	5·2	5·4
Average strength of coloured labour force	[illegible]	[illegible]	[illegible]

* Loss.

Mr. [illegible] Whitehouse, the consulting engineer, states:—"Operations during the year were seriously affected by a strike of white employees, which extended from the 10th January to the 17th March, and during these first three months of the year a loss of £29,8[illegible] was incurred. The total profit for the year amounted to £51,225. Including the abnormal period of the strike the working costs for the year were 20s. 4d., as compared with 22s. for the previous year. The reorganisation of underground work on the conclusion of the strike is reflected in the working costs covering the last six months of the year, which averaged 17s. 8d., or a decrease of 4s. 4d. per ton milled as compared with 1921. A factor of considerable importance in the year's operations was the reduced price of gold, the average value obtained for the year being [illegible] per fine oz., as compared with 103s. 4d. for the previous year. This decrease was equivalent to a sum of £[illegible] on the gold output. The alterations to the western, or Rose Deep, reduction works have now been completed and the plant is working satisfactorily up to its full capacity. The tonnage of payable ore developed for the year amounted to 275,290 tons, of an estimated value of 5·4 dwts. The ore reserve re-computed and re-valued at 31st December, 1922, was as follows:—Available, 1,700,800 tons, value 5·3 dwts.; shaft pillar ore, 428,000 tons, value 6·0 dwts.; total, 2,128,800 tons, value 5·4 dwts. The reduction in the reserve is due to the small tonnage developed during the year and the elimination of certain low-grade blocks which have proved unpayable. The latter factor is responsible for the slight increase in grade. No improvement in the grade of ore milled is anticipated. During the current year a proportion of the mill tonnage will again be obtained from reclamation areas, a source of supply of somewhat lower grade than the reserve, and, in consequence, the recovery will be slightly less than that indicated by the value of the ore reserve."

Geldenhuis Deep Prospects.

THE STRIKE AND ITS AFTERMATH.

The annual report of the Geldenhuis Deep states that in the first three months of the period under review, direct losses were incurred totalling £[illegible]. As a large number of the Company's native employees had taken their discharges during the strike, operations were only resumed on a normal basis about the middle of the year. In spite of the direct loss due to the strike, and the decline in the price of gold of 15s. per fine ounce, which accounted for a decrease of £36,212 on the gold output, the mining operations resulted in a loss of only £35,137. The beneficial effect of the reorganisation of underground work which was carried out on conclusion of the strike is reflected in the working costs during the last six months of the year, which record a decrease of 6s. 0d. per ton milled compared with the average costs of the previous year. As pointed out by the Consulting Engineer, the possibility of attaining a further substantial reduction in working costs is limited owing to the scattered nature of working places. The ore reserve remeasured and revalued at 31st December, 1922, records a small reduction in tonnage and a decline in value of 0·8 dwt. per ton. Areas still available for development are becoming restricted and the tonnage in reserve can only be maintained by a decrease in working costs which would render available ore at present unpayable. The large proportion of low grade reclamation ore, necessarily included in the tonnage milled, will continue to reduce the yield per ton milled below the value called for by the ore reserve. The following summarises the salient features of the work of the past three years:—

	1920.	1921.	1922.
Tons milled	[illegible]	[illegible]	500,862
Working costs per ton	27s. 10d.	28s. 0d.	21s. 6d.
Revenue per ton with gold at 84s. per oz.	23s. 6d.	22s. 5d.	21s. 6d.
Working Loss per ton with gold at 84s. per oz.	4s. 4d.	5s. 7d.	3s. 0d.
Working Loss with gold at 84s. per oz.	£121,079	£159,150	75,652
Additional revenue represented by difference between 84s. per oz. and actual price realised	£207,[illegible]	£161,096	£40,215
Total working profit	£84,8[illegible]	£2,546	*£35,137
Development footage	6,317	8,580	7,261
Ore reserve, tonnage	1,167,100	914,200	881,600
Average value of ore reserve, dwts. per ton	6·1	6·7	5·9
Average strength of coloured labour force	4,177	4,567	4,623

* Loss.

The Consulting Engineer, Mr. J. Whitehouse, writes:—The year's operations were very adversely affected by the strike of white employees, which extended from the 10th January to the 17th March. The loss sustained by the mine in the first three months of the year amounted to £55,333. Small profits were earned during the latter half of the year, with the result that the working loss for the period under review was reduced to £35,137.

The decreased price of gold was also an important factor. The average price realised was 90s. 1d. per fine ounce as compared with 105s. 1d. for the previous year; this difference was equivalent to a sum of £96,212 on the gold output. The re-organisation of underground work following the termination of the strike has resulted in a reduction in the average working costs. Excluding the first six months of the year, the costs averaged 21s. 6d. per ton, or a decrease of 6s. 6d. per ton compared with the previous year. The ore reserve remeasured and revalued at 31st December, 1922, was as follows:—

	Tons.	Value Dwts.
Available	611,200	5.9
Shaft pillars, etc.	273,400	6.1
Total	884,600	5.9

The ore reserve shows a small reduction in tonnage and a drop in value of 0.8 dwt., which is due chiefly to the lower pay-limit used in the valuation. There is, in addition to the above, an amount of 131,000 tons, valued at 6.1 dwts., standing in accessible areas of the mine, and a portion of this tonnage may be rendered available at some future date. The proportion of mill tonnage obtainable from the reserve must continue to be comparatively low, and the effect of the inclusion of a large tonnage of lower grade reclamation ore will be to reduce the milling grade below that called for by the value of the reserve.

There is now little opportunity for further development, and the maintenance of the reserve in the future will only be possible by the inclusion of lower grade ore which may be warranted by a further reduction in working costs. An adverse factor in this mine is the scattered nature of the working places, and the consequent heavy maintenance required to keep open many working places yielding a small output. Such conditions prohibit efficient and economical mining, and limit the possibility of reducing working costs to a point which will allow of a material margin of profit. A continuation of mining operations is only possible if working costs can be brought down and kept sufficiently low to make it profitable to mine the large bodies of lower grade ore which stand developed in the mine, but, under present conditions, cannot be included in the reserve.

The New Kleinfontein.

MR. E. J. WAY'S ANNUAL REPORT.

In his annual report for the year 1922 on the New Kleinfontein Mr. E. J. Way, the Consulting Engineer, writes:—I herewith beg to hand you my report on the operations carried out on the mine of your Company for the year 1922.

The principal features with which I propose to deal are:—(1) Results of development; (2) Results from the reduction works; (3) Working costs; (4) General.

1. Results of Development.—On the same basis as that adopted for several years past, viz., that of 1914, the annual re-estimation shows that the ore reserves in the New Kleinfontein Section of the mine were 1,208,655 tons, of an average value of 5.19 dwts. over a stoping width of 57.62 inches. As was to be expected, this tonnage in reserve is a decrease of 116,678 tons as compared with that at the end of the previous equivalent period. The Eastern Section of the New Kleinfontein mine has now been almost entirely developed, and there now remains only the Western Section from which additions to the reserves can be made. In this latter area, the percentage of payability is considerably lower than that in the Eastern Section. The price of gold has not yet become normal, and I therefore again submit a table showing the amount of ore available on various pay limits, together with the estimated recovery value, after making due allowance for sorting and the losses in the Reduction works.

The value of the ore is calculated at the standard value of gold.

Pay Limit. dwts.	Payable Tons.	Average Stope width, Inches.	Average Stope value, dwts.	Recovery Value.
4.00	1,053,719	58.08	5.39	26 1
3.76	1,208,655	57.62	5.19	25 1
4.25	917,138	58.27	5.58	27 3
4.50	771,575	57.89	5.81	28 5
4.75	663,669	58.65	6.01	29 5
5.00	593,070	58.81	6.15	30 1
5.25	482,860	57.61	6.38	31 3
5.50	385,085	58.06	6.64	32 6

The development of the Benoni Section of your Company's mine is progressing steadily, but was very much retarded by the strike and revolution at the beginning of the year. This occasioned delay, not only during the actual period of the strike, but for several months thereafter.

2. Results from Reduction Works.—Your attention is drawn to the fact that the grade of ore milled during the year is lower than that during the previous year. Everything is being done at the Reduction Works to improve extraction results from this low grade ore.

3. Working Costs.—The working costs for the year amounted to £507,149 2s. 4d., representing £1 1s. 7d. per ton milled. This shows a decrease of 1s. 10.5d. per ton as compared with the cost for the previous year. This decrease is accounted for by a reduction in the amount paid on account of wages, a slight decrease in the cost of stores, and by the re-arrangement of work made possible owing to changed conditions after the strike. As compared with 1914, 1915, the cost of stores is very much higher, but it is hoped that these prices will be reduced, although it is hardly likely that for some time they will reach pre-war level.

4. General.—Although the ore reserves quoted above show a decreased tonnage, it is satisfactory to note that their value has been maintained. Even with the reduced costs now prevailing, it is paramountly necessary to maintain the strictest economy and to make every effort towards further reduction, without sacrificing efficiency, if your Company's mine is to remain a profit-earning venture. The importance of this is borne out by the fact that the large area embraced by the Apex Mynpacht is shut down, because the profitable margin between the possible yield from this area and working costs at the present level is non-existent. If it should be possible to reduce working costs to the pre-war level, that is, to the neighbourhood of from 16s. to 17s. per ton, then it is reasonable to believe that there is a very large tonnage of ore available which could be worked profitably.

Transvaal Consolidated Land and Exploration Co., Ltd.

The following cable was sent to London on 22nd March 1923.—"Re Reduction of Capital: Board meeting to-day resolved convene special meeting of shareholders 19th July, 1923, at which resolutions will be submitted to reduce capital by cancellation of approximately 41,000 excess shares and distribution 2s. 6d. cash per share to the remainder. Official notice with covering circulars will be issued about 1st May."

Ore Reserves and Operations at Brakpan Mine.

POINTS FROM ANNUAL REPORT OF INSPECTOR OF MINING LEASES.

From the report for 1922 by the Inspector of Mining Leases we take the following:—

Ore Reserves.

The payable ore reserves as at the 31st December, 1922, are estimated by the company at 2,439,280 tons, valued at 8.29 dwt. over a stoping width of 70.0 inches. This is an increase of 46,000 tons compared with the previous estimate as at 31st December, 1921. The average value shows a decrease of 0.48 dwt., whilst the stoping width shows an increase of 1.87 inches, equivalent to a decrease of 11 inch pennyweights. Full particulars regarding the ore reserves are not yet in my possession, and further remarks will be held over until my next quarterly report. During the five years 1917 to 1921, when the Government received only 6 per cent. of the annual profits, the ore reserves were calculated half-yearly. This is no longer necessary, and the usual custom of calculating the reserves at the end of the year is reverted to.

Operations.

The operations for the year were adversely affected by the industrial troubles at the commencement of the year, and this fact should be taken into consideration in connection with the comparisons of the figures with those of the previous year. Mining and milling operations did not approach normal until the month of May, when the native labour complement about reached the average required.

Shaft Equipment.

No. 3 Circular Shaft.—The equipment of this shaft with steel buntons and guides was delayed until the connection underground was made with the workings from the No. 2 shaft, which took place in May. A commencement of the shaft equipment was made in June, and this work may now be said to be completed. The shaft has four winding compartments, two for rock skips of 5 tons capacity each, and two for double-decked cages. At present only one permanent hoist has been erected, which will operate either rock skips or cages, arrangements being made for the interchange of these as required. The second permanent hoist will be erected at such time as the development and opening up of the ground in the vicinity of this shaft may justify. The permanent boiler plant consists of four Babcock and Wilcox water tube boilers of 350 h.p. each, provision being made for an additional boiler. The boiler plant, together with the coal bunkers and overhead railway approach thereto, is practically completed. The foundations for the steel headgear are completed and a commencement has been made with the erection of the steel work, and it is anticipated that this will be completed in March.

Development.

Of the total footage developed, 2,240 feet were carried out at the No. 4 shaft. Of this footage 1,430 feet were sampled, 23 per cent. of which was payable, the reef channel value and width being 11.95 dwt. over 29.12 inches. The total development footage for the year shows a decrease of 7,619 feet compared with that accomplished during 1921, this decrease being due to the industrial disturbances at the commencement of the year under report. Taking the mine as a whole the payable percentage of the footage sampled has improved from 40 per cent. to 54 per cent., and the average value from 588 inch dwt. to 604 inch dwt. The main incline south of the No. 2 shaft made connection with the No. 3 shaft workings in May. The east haulage from the No. 3 shaft has been driven over 1,000 feet, but all off reef. The heading to the west to connect with the No. 4 shaft workings is also off reef owing to faulting. At the end of the year there was a distance of about 2,130 feet to be driven to connect the two shafts. The ground in the vicinity of No. 3 shaft is much disturbed, necessitating a considerable amount of timbering. There has been some improvement in the values met with on the western side of the mine during the year in the ground opened up by the 19 west raise and the 18 E south haulage, and a small tonnage has been brought into the pay ore reserves.

Mining.

The rock broken in the mine during the year, according to survey measurements, amounted to 648,221 tons. In addition there were 12,426 tons dumped as waste. Compared with the previous year there was a decrease of 118,363 tons in the tonnage broken due to the dislocation of mining operations during the first quarter of the year. Work in the mine did not reach normal until about the middle of the year. The average monthly tonnage broken for the six months July to December showed a considerable improvement on the monthly average for 1921, the increase for the six months averaging 10,860 tons per month. The average value and width of the ore mined from the payable reserves according to the data adopted in the estimation inches, whilst the payable reserves as a whole averaged 8.61 dwt. over 68.13 inches. Overmining to the extent of about three-quarters of a pennyweight has taken place, but this overmining was forecasted by the company to provide the necessary funds to meet the heavy cost of mine equipment. The face sampling value of the ore mined in the payable reserves throughout the year averaged two inch pennyweights higher than the estimated corresponding block value. For the previous year this difference in value was also two inch pennyweights, which shows that reliability may be placed on the ore reserve estimation. A small decrease in the stoping width, together with an increase in the channel width in the payable ore reserves, resulted in an average decrease in the external waste mined of about two inches compared with the width estimated to be carried.

Ore Treatment.

Compared with the previous year, there has been a decrease of 110,052 tons in the tonnage milled, and 41,955 ounces in the gold obtained. The value of the ore before milling was about a quarter of a pennyweight per ton higher than for the previous year. As already mentioned, operations did not become normal until about the middle of the year. During the six months July to December the tonnage milled shows a satisfactory increase on that milled during the corresponding period of 1921, the monthly increase averaging 5,766 tons. In fact, the tonnage milled during these six months was greater than that milled during any six months' period since the commencement of operations, although the full nominal capacity of the plant, viz., 75,000 tons per month, has not yet been reached. The percentage of waste sorted increased nearly 2 per cent. compared with the previous year.

Revenue and Expenditure.

Of the total revenue from gold the sum of £86,864. 16s. represents the amount of the gold premium, being at the average rate of 7s. 1.70d. per ounce, and equivalent to 3s. 1.92d. per ton milled. This represents a decrease of 13s. 6.7d. per ounce and 5s. 9.45d. per ton milled, compared with the previous year. Bank exchange on remittance shows an increase of £7,722. 17s. The working costs per ton milled compared with the previous year show a decrease of 2s. 8.701d. Compared with the previous year the profit shows a decrease of 1s. 6.914d. per ton milled, but if the strike expenditure is excluded the decrease is 2s. 0.836d. per ton milled. Excluding the gold premium, in both years the profit shows an increase of 1s. 2.51d. per ton milled.

Under the Miners' Phthisis Act, 1919, the company was assessed for the year at £16,865. 6s. 1d., and under the Employers Tax Ordinance (No. 8), 1922, at £4,415

Capital Expenditure.

The principal construction work covered under this head consists of the installation of steel buntons and guides, compressed-air main, new hoist and boiler plant, and the steel headgear at the No. 3 shaft.

Government's Share of Profits.

The share of the net profit for the year payable to Government under clause 8 of the lease amounts to £37,170 5s. For the previous year the amount was £21,168. 9s., that being the final year of the five-year period when the Government received only 5 per cent of the net profit. The expenditure for the year has been examined by myself and an official of the Inland Revenue Department with regard to its correct allocation as between working and capital expenditure in terms of the Mining Taxation Act, 1910.

General.

The average number of white employees at work during the year was 349, as compared with 498 for the previous year. The average number of coloured labourers at work during the year was 2,945 underground and 944 on surface, making a total of 3,889, as compared with 3,741 underground and 1,240 on surface, totalling 4,981 for the previous year. Dividend No. 21 of 20 per cent. (4s. per share) free of Union Dividend Tax, was declared on the 15th December, 1922. Operations during the year have been satisfactorily and efficiently carried out making due allowance for their dislocation during the strike period

Increased Efficiency and Economy at Springs Mines.

GOVERNMENT INSPECTOR REVIEWS THE YEAR'S DEVELOPMENT RESULTS AND MINING OPERATIONS.

From the annual report of Mr. J. H Twiddy, the Government Inspector of Mining Leases, we take the following:—

The payable ore reserves as at the 31st December, 1922, are estimated by the company at 3,146,217 tons, valued at 8.79 dwt. over a stoping width of 59.81 inches. This is an increase of 89.986 tons compared with the previous estimate as at the 31st December, 1921. Both the value and width are slightly less, equivalent to 23 inch pennyweights. Full particulars regarding the ore reserves are not yet in my possession and further remarks will be held over until my next report.

Operations.

The work carried out during the year and the cost thereof were adversely affected by the industrial disturbances at the commencement of the year, and this fact should be borne in mind when reviewing the comparisons of the year's figures with those of 1921. Mining and milling operations did not approach normal until the month of May, and development until June when the native labour complement reached a satisfactory figure.

Shafts.

No. 3 Shaft.—The underground equipment for the handling of the ore was completed together with the steel headgear and other surface equipment. The delivery of ore from the shaft to the mill commenced in October.

No 4 Shaft.—No work has been done at this shaft during the year. It is equipped with a permanent steel headgear, and the boiler and winding plant, etc., is in readiness to commence sinking at such time as operations may be decided upon. The present depth f the shaft is 94 feet.

Development.

The total development for the year shows a decrease of 9,517 feet compared with that of the previous year.

The percentage payable of the footage sampled has decreased from 54 per cent. to 50 per cent., but the average value has increased from 652 inch dwt. to 721 inch dwt.

Notwithstanding that the development for the year shows a reduction on that for 1921 of 41 per cent., the pay ore reserve tonnage has been not only maintained but slightly increased.

The development in the north-west section of the mine from the west haulage No. 1 shaft has been very satisfactory, and a considerable body of high grade ore has been opened up. Also the development to the north of the east haulage of the No. 2 shaft has proved the continuation of the existing pay area in this section of the mine. The development in the south and south-western areas has brought little further payable ore into reserve.

Compared with the previous year there was a decrease of 96,695 tons in the tonnage broken. The average value and width of the ore mined from the payable ore reserves as at the 31st December, 1921, was 9.73 dwt. over 61.39 inches, whilst the payable reserves as a whole at that date was 8.92 dwt. over 61.54 inches, overmining has therefore taken place to approximately three-quarters of a pennyweight. The additional gold recovery resulting from this overmining would little more than cover the loss due to the strike made during the first quarter of the year, and it may therefore be considered reasonable. Theface sampling value of the ore mined in the payable ore reserves throughout the year averaged four inch pennyweights lower than the estimated value of the corresponding blocks, a very close approximation. A reduction of over two inches on average has taken place in the width of external waste mined compared with the previous year, and the average stoping width has been reduced one inch. Since the strike in the early part of the year the breaking, handling and tramming of rock in the mine has been confined to single shift, resulting in considerably increased efficiency and economy.

Ore Treatment.

Compared with the previous year there was a decrease of 60,660 tons in the tonnage milled and a decrease of 24,927 ounces in the gold obtained, excluding gold from the clean-up.

The additional plant erected during the year to increase the output by 10,000 tons per month was completed and came into full operation during December. The nominal capacity of the plant is now 2,000 tons a day. The ore reduction plant now consists of three coarse crushers, 80 stamps and 12 tube mills. To the extraction plant has been added the Crowe de-aeration and the Merrill press processes. Plate amalgamation has been entirely discontinued

It is now the intention to still further increase the capacity of the plant by 10,000 tons bringing it up to say 60,000 tons per month. All arrangements have been made to obtain the additional plant which is expected to be in operation before the end of 1923. The policy of the company will be to gradually eliminate the existing 80 stamp mill by the substitution of tube mills, maintaining the capacity of the plant at 60,000 tons per month.

Mining Expenses.

Compared with the previous year the total reduction expenses show a decrease of 1s. 2.136d. per ton milled, the decrease being due chiefly to the elimination of amalgamation and the reduced price of power.

Revenue and Expenditure.

Of the total revenue from gold, the sum of £70,942 11s. 1d. represents the amount of the gold premium, being at the average rate of 4s. 10.871d. per ounce and equivalent to 1s. 4.241d. per ton milled. This represents a decrease of 11s. per ounce and 1s. 10.984d. per ton milled compared with the previous year. Bank exchange on remittances comes to [illegible] 4s. 11d. The working costs per ton milled compared with previous year show a decrease of [illegible]. Compared with the previous year, the profit shows a slight decrease of 1.25 pence per ton milled, but if the capital expenditure is excluded the profits show an increase of [illegible] per ton milled. Excluding the gold premium in both years, the profit shows an increase of [illegible] 9.05d. per ton milled. Out of the revenue from gold the company has appropriated the sum of £16,697 17s. 6d. to meet the cost of the installation of the Merrill press process in the reduction works, but as this is a capital expense as far as the Government is concerned, the amount does not figure in the statement of revenue and expenditure. Under the Mines' Profits Act, 1910, the company was assessed for the year at [illegible] 2s. 8d., and under the [illegible] Tax Ordinance No. [illegible], 1922, at £3,717.

Capital Expenditure.

The capital expenditure for the year amounted to £230,890, made up as follows:—Shafts and equipment, £104,105; Reduction plant, £54,859; Electric power and light plant, £3,108; Steam condensing plant, £11,645; Air compressor plant, £20,298; Railway siding, £16,951; General surface equipment, £2,664; General expenses (lease area to be apportioned), £11,104; total £231,327; less credits, £437, equal total of £230,890.

Additional to the above but not shown as capital expenditure by the company is the sum of £16,697, for the installation of the Merrill press process. The above expenditure covers the completion of the following construction work: *At the No. 2 Shaft.*—The railway from No. 2 to No. 3 shaft, [illegible] line for ore from No. 3 shaft; extension of headgear ore bin. *At the No. 3 Shaft.*—The erection of the following: engine house, 150 drill air compressor and condenser, cooling dam, steel headgear, concrete ore bin, two winding engines, boiler plant; the reduction plant to [illegible] tons capacity, the extension of the main transformer house, and the installation of 12-inch air mains underground.

Government's Share of the Profits.

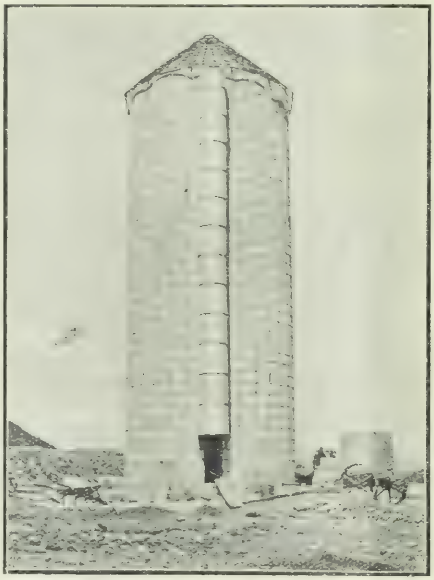
The share of the net profit for the year payable to Government under clause 9 of the lease amounts to £11,117 [illegible]. For the previous year this amount was £15,641 8s. The expenditure for the year has been examined by myself and an official of the Inland Revenue Department with regard to its correct allocation as between working and capital expenditure in terms of the Mining Taxation Act, 1910.

General.

The average number of white employees at work during the year was 342 as compared with 516 for the previous year. The average number of coloured labourers at work during the year was 2,442 underground and 823 on surface, making a total of 3,265 as compared with 3,571 underground and 1,026 on surface, totalling 4,597 for the previous year. In terms of the mineral lease the Consolidated Mines Selection Company, Limited, took up during the year 63,500 unissued shares in the capital of the company at [illegible]. The issued capital of the company is now £1,460,796, the registered capital being £1,500,000. Dividend No. 7 of 15 per cent. (3s. per share) free of Union Dividend Tax was declared on the 15th December, 1922. During the year operations have progressed satisfactorily and economically, making due allowance for their dislocation during the strike period.

CEMENTATION IN MINING.

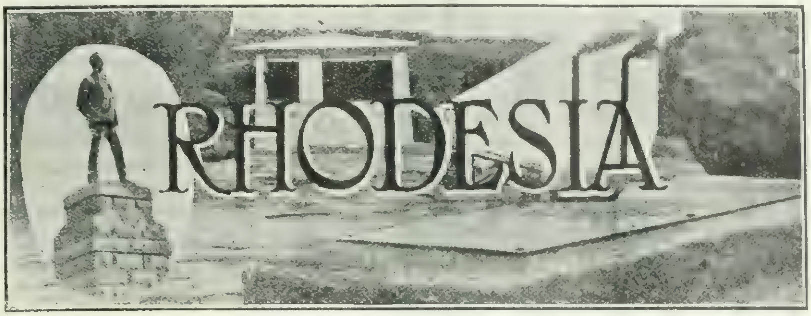
What a boon cementation would have been to Australian mining twenty or thirty years ago, when the deep mines of Charters Towers, Gympie, and elsewhere were being operated. It is a process [illegible] that was first tried in the deep mines of the Rand, where very heavy water was encountered in sinking, and at that time was called the Francois cementation process. In deep sinking, underground channels with high pressure water are frequently met with, and there was formerly nothing to do but to let it gravitate to the lowest level of the mine, and then pump it to the surface, a costly undertaking in a mine 3,000 ft. to 4,000 ft. deep. Many may remember the flooding out of the Brilliant Extended shaft on the Charters Towers field, where a stream was met with at over 2,000 ft. deep, and which rose up to about 700 ft. level before it could be pumped out. Nowadays, such mishaps are remedied by cementation applied by gangs of special workmen, who immediately a flow is struck, put a line of bores through the wall rock at various distances to intersect the water channel, and by providing further exits for the water take off sufficient pressure to allow the fissure to be cemented up. This is allowed to set, and, if necessary, is reinforced with wall plates, and then the boreholes are closed by cement. First inaugurated in the Rand Deeps, it is now extensively applied in the deep Cornish mines, and has enabled mines to continue working that in former days would have been rendered idle for some time. A noticeable success was in the St. John del Rey gold mine, in Brazil, the deepest gold mine in the world, at a depth of between 6,000 ft. and 7,000 ft., where the water pressure is enormous.



"HUME" Reinforced Concrete Silo, 45 feet high, 15 feet internal diameter; capacity 191 tons; made of "HUME" Patent Concrete Blocks.

ANSWERS TO CORRESPONDENTS.

Several letters and answers to correspondents are held over this week, owing to pressure on space caused by our Special Cement Supplement.



Rhodesian Mineral Output.

The yield of gold from Southern Rhodesia for the year 1922 amounted to 652,791·37 fine ounces, valued at £3,111,468. This shows an increase of 67,266·38 fine ounces in weight, but a decrease of £105,807 in value as compared with the previous year. The decrease in value is due to the falling premium on gold. The quarterly averages of the premium for 1922 was 8s. 6d. per fine ounce as compared with £1 2s. 3d. for the previous year.

The following quantities and values of other metals and minerals, coal and diamonds, were also declared, viz.:—

Silver: 172,209.09 fine ounces	£24,526
Coal (raised): 515,650 tons. Value coal sold and coke	225,345
Copper: 3,388.21 tons	201,022
Chrome Ore: 93,474.53 tons . .	302,880
Asbestos: 14,248.51 tons	577,699
Arsenic: 496.92 tons	11,774
Mica: 66 tons 421 lbs.	16,561
Tin: 53 tons	65
Tungstic Ores: 44.50 tons	1,600
Diamonds: 255.625 carats	1,643
Total	£1,363,115

The grand total value of the mineral production for the year 1922 was £4,474,583, as compared with £4,720,375 for the previous year, being a decrease of £245,792. This decrease is made up as follows:—

Decrease in value of gold	£105,807
Decrease in value of other metals and minerals	139,985
Total	£245,792

The Falcon.

The report of the Falcon Mines for the year ended 30th June, 1922, states that the outstanding debenture stock at 30th June, 1922, stood at £67,963, the whole of which fell due for repayment at the end of the following month. Stock to the amount of £1,340, belonging to smaller holders, was redeemed, leaving £66,623 in the hands of larger holders, who have agreed to repayment being deferred for the time being. Of this amount, £6,623 has recently been redeemed, leaving £60,000 to be repaid. In view of depletion of ore reserves and the necessity of adding to these, it was decided, having regard to improved financial position, to recommence development work on a limited scale, and sinking of internal shaft was therefore restarted in May last. At the end of June this had been deepened 85 ft. to a point 116 ft. below the 12th level. Ore reserves at 30th June, 1922, were estimated at 119,600 tons. Ore treated, 190,155 tons, from which 3,320,394 tons of blister copper were recovered, yielding £370,403, equal to 38s. 11½ per ton of ore treated. Working costs amounted to £361,276, equal to 38s. 3¼d. per ton of ore treated, leaving mine profit, exclusive of London expenditure, of £6,127, equal to 7¾d. per ton of ore. In addition, £2,545 has been received, chiefly from treatment of other ores and slags in smelter. Working costs show reduction of 5s. 1d. per ton compared with previous year. Working profit was £4,950, which, after debiting loan and debenture interest and British income-tax, is converted into debit balance of £6,622. Deducting £180,867 brought forward, leaves credit balance of £174,244, represented by stores, development, broken ore in stopes, etc. Operations for six months to 31st December, 1922, show ore treated, 98,521 tons; output fine copper, 1,695 tons; fine gold, 17,597 ozs.; fine silver, 35,368 ozs. Estimated value, taking copper at £60 per short ton, gold at 85s. per ounce and silver at 2s. 6d. per ounce, £180,915; working costs (averaging 38s. 0½d. per ton of ore treated), £187,415.

Congo Progress.

Speaking in the course of a debate in the Belgian Chamber of Deputies on the Colonial estimates, M. Franck, Minister of Colonies, stated that the export trade of the Congo this year was approximately 500,000,000 francs. It was expected that 45,000 to 50,000 tons of copper, 250,000 to 300,000 carats of diamonds, and 3,000 kilogrammes of gold would be exported during 1923.

M. Franck made the interesting announcement that experiments with the new remedy for sleeping sickness called Number 205 had been highly successful. Referring to vital statistics, the Minister stated that the white population of the Congo on January 1 was 9,631, of which 60 per cent. was made up of Belgians.

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South African Industrial News Service.

The Results of the FREE ESSAY COMPETITION, Mining Industry Board, are:-

1st Prize	£100	**DERMONT CREAGHE,** P.O. Box 13, Humansdorp, C.P.
2nd Prize	£50	**MRS. EDITH O'CONNOR,** Farmer, Vlakpoort, P.O. Slurry, District Marico, Transvaal.
3rd Prize	£25	**REGINALD A. HAYSON,** Assistant Master, Durban High School, 63 Vause Road, Durban.

£5 each has been awarded to:

JOHANNES COENRAAD ROSSOUW, Schoolmaster, P.O. Kingsley, via Dundee, Natal.

T. H. HILL, Linotype Operator, 8, Berkley Road, Sea Point, Cape Town.

SIDNEY FREDERICK SIMMS, Manufacturer's Agent, P.O. Box 1871, Durban.

JOHN WARREN, Ostrich Feather Sorter, 24, Sebastian Street, Port Elizabeth.

TOBIAS MOSTERT BERRANGE, Farmer, Grootvlei, P.O. Naboomspruit, District Waterberg, Transvaal.

A. TRANMER, Mining Timber Buyer, Oake Street, Greytown, Natal.

MRS. FLORENCE CARTER, 135, Loop Street, Pietermaritzburg, Natal.

PRIZES HAVE BEEN INCREASED TO £210.

Cheques have been posted to the above addresses.

MONTELEO DIAMONDS, LIMITED.

(Incorporated in the Orange Free State.)

NOTICE IS HEREBY GIVEN that a Special General Meeting of the Shareholders of the above Company will be held at the Company's Offices, Bettelheim Buildings, Johannesburg, **on Tuesday, the 29th day of May, 1923,** at 4.15 p.m. in the afternoon, when the following resolutions will be proposed:

1. That the sale and transfer of all the assets, liabilities, and undertakings of the Company to the New Monteleo Diamonds, Limited, in consideration of the issue by the said New Monteleo Diamonds, Limited, to the Company of 47,458 fully paid-up shares of 5s. each, be passed, authorised and confirmed.
2. That the agreements in connection with the sale and transfer of the said assets, liabilities, and undertakings as aforesaid and in connection with the promotion or flotation of the said Company, entered into by the Board of Directors, be ratified and confirmed.
3. For the transaction of any other business in connection with the above matters which it may be deemed expedient to transact.

The Share Transfer Books of the Company will be closed from the 15th to the 29th May, 1923, both days inclusive.

By Order of the Board,

SAV. B. DOWLING,
Secretary.

Johannesburg, 28th March, 1923.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

HOLIDAY AND SHOW WEEK RESTRICTS BUSINESS—IRON AND STEEL: LOCAL AND WORLD CONDITIONS—CHAMBER OF MINES' REVIEW, 1922—TIMBER AND BUILDING MATERIALS—LATEST METAL QUOTATIONS.

General.

This is the Rand's Agricultural Show week and a holiday one to boot, and therefore somewhat divorced from general business. Owing to our having to go to press early in the week we are unable in this issue to give an extended notice of the various exhibits. We shall, however, do so in our next. Suffice it to say to-day that the opening of the Show on Wednesday last witnessed the finest collection of agricultural implements and machinery and appliances yet shown in Johannesburg, which was viewed by a record crowd of visitors. Our country cousins are giving retailers, at any rate, a well-deserved fillip as regards ready money, which has been so scarce of late.

But, when all is said and done, looking at the Rand position fairly and squarely, the present state of European affairs is very discouraging, and it is impossible for us here to form any opinion as to the probable future trend of affairs there. In conversation with a leading commercialist this week, one learned it was quite possible that we might see even darker days before any radical improvement in the situation occurred. We must, in any case, await as patiently as possible future events, hoping of course for the best, but not being discouraged if hopes of a satisfactory settlement in European affairs should still be retarded.

Prices locally, except in certain stocks which have reflected large increases, remain about the same, but with a firm and upward tendency. It is generally thought that April month will usher in a slight improvement in business conditions, and that within the next three months, provided European affairs shape more satisfactorily, we should experience a high trading level.

Iron and Steel.

This week, bringing with it the end of the month and the Easter holidays (also a very big thing in Johannesburg, the Agricultural Show) shows a slackening off of trading; business people have been too keen on the Show and the holidays to take much interest in commercial affairs generally.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s., cheques plates, 27s. 100; lb.; imported flats, ½ x 3-16, ⅝ x ⅛, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. lb.; phosphor tin, 2s. 9d. lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 32s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 7s. 6d. to 39s. 9d. each; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Britain: Mail Advices: Iron and Steel.

The amount of business transacted during mail week has shown a distinct falling off. The majority of British works are well booked up and are not inclined to extend their commitments far ahead. Continental works are practically notifying their customers that they do not consider themselves bound by the terms of their contracts. It is reported that Lorraine works have purchased anthracite coal in Britain to experiment with in the production of pig iron.

Pig Iron.—Business with the Continent has practically ceased. The scarcity of pig iron in the British market continues to be an outstanding feature and it is reported that as much as 117s. 6d. has been quoted for No. 3 Cleveland. Owing to doubt as to the future supply and price of coke, manufacturers are advancing their quotations. There has been a good demand for basic iron, and over 90s. at furnaces has been asked in some cases. Billets have increased to £8 10s. delivered; wire rods about £10 f.o.b.; steel bars about £9 f.o.b.

Pig Iron.—Cleveland: Foundry No. 1 120s., No. 3 117s. 6d., No. 4 forge 110s.; mottled, 107s. 6d.; hematite, mixed numbers, 112s. 6d. Midlands: No. 3 forge, 85s. to 92s. 6d. Scotland: No. 1 G.M.B., 112s. 6d., No. 3 107s. 6d.; hematite, f.o.b. steelworks, 110s. [illegible] Crown bars, £11 best bars, £11 10s.; angles, £11 10s.; [illegible] £12. Steel billets, [illegible] bars and angles, [illegible]; flat plates and [illegible], £13 [illegible]; angles, £13 [illegible], £13 [illegible]; [illegible] £11 [illegible]; [illegible], £11 [illegible]; hoops, £11 10s. and upwards. [illegible] sheet bars and billets, £8 10s.; angles and [illegible] [illegible] [illegible].

Scaffolding [illegible] galvanised [illegible], 22s. per cwt.

Tin Plates.—Basis price, 20 x 14, 23s. 6d. to 24s.

Wire, Nails and Sheets.—Galvanised wire in 1 cwt. bundles, fencing wire 8 to 8 gauge, 25s. per cwt.; bundle wire in 7 lb. rings, 8 gauge 27s. 6d. per cwt.; strand wire in 5 cwt. coils, 7 ply to No. 4 gauge, 28s. 6d. per cwt.; barbed wire on [illegible], 22s. 6d. per cwt. Wire nails, 0 to 7 gauge, 19s. per cwt.; wire steel nails 3 in. to 6 in. clasp, in 2 cwt. kegs, 19s. 6d. per cwt.; ditto in 1 cwt. kegs, 21s. per cwt. Galvanised corrugated sheets, 22 to 24 gauge, 23s. per cwt.; flat steel sheets, best workmanship quality, 22 to 24 gauge, galvanised, 25s. per cwt.; black, 18s. 6d. per cwt.; bolts and nuts, 30 per cent. discount.

Tin has advanced to £197 17s. 6d. for cash and £199 10s. for three months.

Lead has been a strong market and has advanced to £28 15s.

Spelter. [illegible] conditions are prevailing in this market.

Advance in Metals.

The following comparison between prices ruling on January 1 and on February 22 is interesting as showing the recent upward movement in prices:—

	Copper	
	Cash.	3 months.
January 1	£64 13 9	£65 8 9
February 21	69 18 9	70 13 9
Increase	5 15 0	5 5 0

	Tin.		Lead.
	Cash.	3 months.	
January 1	£182 6 3	£183 16 3	£26 17 6
February 21	197 17 6	199 5 0	28 10 0
Increase	15 11 3	15 8 9	2 7 6

The only metal which shows a fall in price since January 2 is spelter, the current quotation of which is £35 16s. 3d. per ton, or 15s. 9d. less than at the opening of the year, but this decline is probably due to the fact that arrivals from America have made the prompt position easier. It is thought in some quarters that the present industrial liveliness in the United States will continue until next autumn, and in that event we should have rising markets for a considerable time to come.

Belgian and English Rails.

The Yarmouth Town Council has affirmed the principle of accepting Continental material as against British where cost and superiority are shown. In the case of a tender for supply of tram rails it was proved that a Belgian tender would show a saving of £737 on a £6,000 contract, and, it is unpalatable to record, a superiority over English rails. The Continental rails would be delivered in four or five weeks, whereas delivery of British rails would take 13 to 20 weeks. Happily this is, under present circumstances, an isolated case of the Continent competing successfully with Britain.

America.

General business in the United States is expanding. Money remains plentiful, the banking position is strong, industrial reports are encouraging, and moreover the fear of another coal miners' strike is ended. Steel prices are now showing an active advancing tendency. Steel mill operations during January showed an ingot production slightly above the rate of 40,000,000 tons a year. The chief factor limiting production is the labour supply.

Production of bituminous coal has kept above 10,000,000 tons a week during January. Trade in the textile market is steadily increasing. Improvement is particularly noticeable in the demand for cotton goods. This is made apparent when one compares January, 1922 price of 27–28 cents with January, 1921 rate of 16–17 cents. There is to be no coal strike on 1st April, as was feared. There is a big demand for coal and production is so great that there is some shortage of cars.

The automobile industry continues to produce at a heavy rate. Prices of cars, however, are showing a downward tendency, due to the very keen competition.

Prices generally are firm with a definite upward tendency. Steel prices are firmer with much buying reported, especially for the railroads and the automobile industry. Coal and coke are very high. Good crops and higher prices for agricultural products have recently stimulated buying. Unemployment is non-existent. Steel mills are having to bid for labour, and the scarcity of it is holding down steel production.

The output of iron ore during 1922 in the United States shows an increase of 60 per cent. compared with the production in 1921, and reached a total of 46,936,000 tons. The Lake Superior region contributed 86 per cent.

Market Conditions.—There is no scarcity of pig iron. Scrap steel is about $22 in Pittsburgh and $18.50 in Chicago. The steel and rolling mills are in a stronger position as regards orders than the pig iron trade. Labour shortages in the more important districts are keeping down steel mill operations, and the mills are falling somewhat behind on deliveries. Bars and small structurals are quoted at $3 to $3.20 per 100 lbs. compared with mill quotations of $2 to $2.10 a week or two ago.

Steel Works and Ore Supplies.

The centre of the iron trade shows a tendency to move west to Pittsburgh, in the stretch between Youngstown and Chicago, but to-day Pennsylvania is still the leading iron and steel producing State. It contributes 40 per cent. of the iron and steel output of the country, which means that the greater portion of the vast United States production of ore has to be carried by rail and lake, and rail again, hundreds of miles before it reaches the furnaces on the eastern seaboard, which also use imported ores to mix with the native material. The Alabama blast furnaces are probably the only important group in the United States drawing the greater portion of their ore supply from a near locality. The Bethlehem Steel Corporation, by its acquisition of the Lackawanna and Midvale Steel Company, has obtained control of practically all the Cuban ore deposits, and can lay down this ore on its own furnace docks at Sparrow Point by direct steamer from Cuba. The Bethlehem Co. also brings iron ore from Chili, probably a longer distance than any other steel-making concern.

United States exports of copper during December, 1922, were as follow:—Germany, 5,200 tons; France, 1,700 tons; England, 3,600 tons; Italy, 2,100 tons; Holland, 1,200 tons; Belgium, 1,000 tons; Spain, 680 tons; Sweden, 450 tons; China, 200 tons; other countries, 640 tons; total, 19,770 tons.

No. 2 foundry, $28 Buffalo and Pennsylvania, and $25 Birmingham. Bessemer, $28 and basic at $27. Heavy steel melting scrap is advancing and now commands $23.50, Western Pennsylvania. Sheet bars and billets, $42.50. Finished materials are moving upwards. Steel bars, $2.25; plates and shapes, $2.30 to $2.50. Railroad spikes, track bolts, cold drawn bars and shafting have advanced $3 per ton. The demand for structural steel is heavy. The independent mills are operating at 85 to 87 per cent., and the Steel Corporation at 90 per cent. of capacity.

Austria.

Iron Output.—The output of pig iron in the Republic during 1922 was 300,000 tons, compared with an average total production under the Monarchy, before the war, of

600,000. In the first nine months of 1922 the country produced 364,000 tons of crude steel, and 2,720,000 tons of finished rolled and forged products.

France.

One of the most important groups of French steel works is the Schneider (Le Creusot) combine, which possesses its own organisation for selling in the French market. These selling agencies have apparently been framed to deal with a much larger output than has yet been provided by the French industry, although not larger than should be possible now that the Lorraine works are in French possession. If full supplies of coke are obtained by the French occupation of the Ruhr, it is estimated that the French production in 1922 of 5,300,000 tons of pig iron and 4,400,000 tons of steel should be easily doubled and a much larger export trade secured.

Engineering Shops.

It is satisfactory to be able to report that these are doing a little more business. Orders have been arriving fairly freely during the last few weeks, and engineers are looking forward to increased activity in the near future.

Second-hand Machinery.

The second-hand machinery market, said a prominent dealer this week, is still very firm, and there are a few orders knocking about for all kinds of material. There is always, he said, a decent amount of business done in second-hand plates and shafting. The business done of late has not been in any of the larger classes of second-hand material such as boilers and engines. Electrical motors, suitable for the V.F.P. voltages, are in demand and very scarce. One or two of the old mines are in the market for second-hand battery spares; but these are very scarce and practically unobtainable, so that the mines must purchase new. There have been a few country orders, and generally business is very firm, and what second-hand goods are obtainable fetched very good prices. As stated previously, dealers are waiting for some of the old mines to close down so as to replenish stocks, which have been very much depleted during the last two years.

Chamber of Mines' Presidential Review.

Mr. Buckle's admirable review of the past twelve months' working of the industry is dealt with elsewhere. It remains only to note a few of the more salient points made by the President. If the former working costs had obtained in December, 1922, which were there in 1921, 19 companies, he said, would have gone out of action, which would have meant the dismissal of 7,573 white men and the loss of some £860,000 spending power. What this would have meant to the Rand it is unnecessary to labour. Mr. Buckle stated that the costs per ton during the year in question had been reduced by 4s. 5d., which figure was still materially above the pre-war costs of about 17s. per ton. It was to be hoped that an approximation of costs to the latter figure might be obtained. A very big point made by the President was that every reduction, however small, meant an addition to the quantity of ore which could be profitably mined, and therefore to the life of the fields. Since the end of the strike, in spite of fallacious statements to the contrary, white employment on the mines had steadily increased. The average monthly cash earnings per man over all classes had also steadily increased.

Timber and Building Materials.

Business, said an important timber importer this week, has been very good, and, judging from his own turnover, merchants had no reason to grumble about things just now. Timber prices are very firm, with an upward tendency. Building operations are fairly big and contractors are busy. Prices for bricks are as before, but firm.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10¼d.; beaver boards, 4d.; floorings, 6d. to 6¼d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d; corrugated iron, 8¼d. to 8¾d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d at coast; West African mahogany, 1 in. to 4 in thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d. to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d per ft 3 ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 10s. 6d.; dry red oxide, 14s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

Second-hand Iron and Timber.

Trading is much about the same in the second hand iron and timber yards as reported last week; there is increased business as compared with, say, about a month ago, but not more than can well be dealt with by dealers. Next month will, it is hoped, show even more favourable results. Stocks of second-hand materials still remain poor, and are selling at 9d. for timber and 7d. for iron.

Blue Building and Plastering Lime.

Trade in this section has improved slightly, obviously due to the increased activity in the building trade generally In Capetown there seems to be a steady demand for this product, despite the severe competition of Belgium and German cement, which is being dumped at the coast at very low prices. Further competition in a lesser degree is being felt from a certain class of low-grade white lime which is being railed to various centres and termed "blue lime." A certain amount of ashes and clinker is ground and mixed with this material which gives it a greyish colour. Blue lime manufacturers, in order to protect themselves, have decided to label every bag of lime, so that the unwary consumer may know whether he receives the right class of lime or not. Manufacturers are also endeavouring to produce a higher grade product by fixing a standard specification for blue lime and always maintaining such standard, by keeping a strict supervision on the analyses, burning, slaking and sieving from time to time

Electrical Goods.

There is no change to report this week in this section, either in regard to volume of business or prices. The recent spurt in the building trade has made itself felt in the electrical goods branch and trading is now on a much sounder basis than during the past few months. Dealers appear pretty confident that from now on business will gradually improve.

Oxygen from the Air.

A factory for the electrical extraction of oxygen from the air is to be established at Swansea, where a great demand for oxygen is expected from the local metal works and shipbuilding companies.

Lower Railway Rates.

Both the Midland and the London and North-Western Railways, in their reports for 1922, express the opinion that the time is ripe for substantial reductions to be made in railway rates. Preliminary discussions to this end have already begun, and recommendations are being made to the boards of the new group companies.

Tenders Invited.

By Pretoria Municipality, per April 9, for the supply and delivery of 6,000 lin. ft. 3 in. galvanised iron pipes; 3,200 lin. ft. 2 in. ditto.

S.A. Reserve Bank.

According to the bank's statement, dated March 21, the ratio of cash reserves to liabilities to the public was 68.3 per cent.

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Air on Wheels"

For driving pneumatic tools,
Rotator rock drills, riveters, etc.

SULLIVAN W.K. 26
COMPRESSORS —

provide a convenient portable air supply.
These outfits consist of a sturdy [illegible] enclosed, splash-oiled compressor driven by internal gear and pinion from a dampproof motor and mounted with starting panel and receiver on a car or truck. An automatic unloader economizes power. Capacities, 120 to 250 cu. ft. Bulletin 4123.

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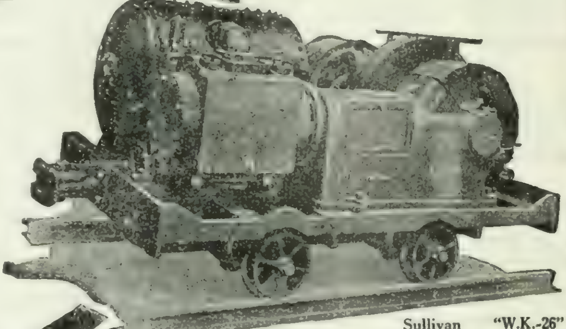

Sullivan "W.K.-26" Motor-driven Compressor Outfit on a Mine Truck.

The Mozambique Portland Cement Company, Ltd.

(Incorporated in the Orange Free State and also registered in the Transvaal and Mozambique Provinces.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Ordinary Annual General Meeting of Shareholders of the above Company will be held in the Board Room, First Floor, Exploration Buildings, Johannesburg, at 12 noon, on Saturday, 21st April, 1923, to transact the following business:—

(1) To receive and consider the Balance Sheet and Reports of the Directors and Auditors.

(2) To elect Directors in place of Messrs. D. A. [illegible] and J. J. de Moraes, who retire in accordance with the Articles of Association, but being eligible offer themselves for re-election.

(3) To confirm the appointment of Mr. Jose Guedes da Silva as a Director of the Company.

(4) To appoint Auditors for the ensuing year and to determine the remuneration for the past audit. Messrs. Deloitte, Plender, Griffiths, Annan & Co. retire but are eligible and offer themselves for re-appointment.

(5) To transact any business that may be transacted at an Ordinary General Meeting.

By Order of the Board,

F. J. M. VAN ZYL.
Acting Secretary.

182 187 Exploration Buildings,
P.O. Box 6677, Johannesburg.
22nd March, 1923. 65991

Union Corporation, Limited.

(Incorporated in the Transvaal.)

NOTICE IS HEREBY GIVEN that the Ordinary General Meeting of Shareholders in Union Corporation, Limited, will be held in the Board Room, 94 Main Street, Johannesburg, Transvaal, on Thursday, May 17th, 1923, at 11 a.m., for the following purposes:—

(1) To receive and adopt the Directors' Report and Accounts for the financial year of the Corporation ended on December 31st, 1922.

(2) To appoint Directors in the places of Mr. Joseph Temperley and Mr. Joseph Kitchin, who retire in accordance with the provisions of Articles 95 and 104, and, being eligible, offer themselves for re-election.

(3) To appoint Auditors in the places of Messrs. Price, Waterhouse & Company and Messrs. F. W. Diamond & English, who offer themselves for re-election, and to fix their remuneration for the past audit.

(4) To transact any business which, under the Articles of Association, may be transacted at an Ordinary General Meeting.

Holders of Share Warrants to Bearer wishing to attend or to be represented at the meeting must produce or deposit their Share Warrants at the Johannesburg Office of the Corporation at least fourteen clear days previous to the time of the meeting, or at the London Office or Paris Office at least thirty days before the date of such meeting, together with a statement in writing of the name and address of the holder and the distinctive numbers of the Share Warrants. For Share Warrants so produced or deposited a Certificate will be issued, entitling the holder to attend and vote in person or by proxy at the meeting in the same way as if he were a registered Member of the Corporation. The Share Warrants deposited in Johannesburg will be released at any time after the meeting, and those deposited in London or Paris will be released twenty days before the meeting.

By Order of the Board,

VERNON J. RONKETTI,
Secretary.

94 Main Street,
Johannesburg, Transvaal.
March 26th, 1923. 66403

Chamber of Mines: President's Annual Review.

MR. H. O. BUCKLE'S MASTERLY ANALYSIS OF THE INDUSTRIAL SITUATION.

Mr. H. O. Buckle presided at the annual meeting of the Transvaal Chamber of Mines on Monday, March 26, and in his address stated :—

When we held our last annual meeting, considerable changes in the conditions of the industry were in progress. We are now in a position to estimate the effect of those changes. In order to do so, I propose to compare the results of December, 1922, with those of the same month in 1921, since the latter was the latest complete month before the strike.

In December, 1922, the tonnage milled on the Witwatersrand was practically the same as that of a year earlier, the respective figures being 2,122,577 and 1,954,057, an increase of only a little over 8 per cent. But in December, 1921, 15 mines made either a profit per ton of less than 1s., or an actual loss; in December, 1922, the number was reduced to five.

Figures that Speak.

If the former working costs had continued, the loss of 7s. 6d. in the price of gold, which has since occurred, would have increased the number of mines in that position in December, 1922, to something like 24, if, which is improbable, they had all continued working. In fact, about 19 of them would, in all probability, have closed down permanently and would have ceased to exist as factors in the production of wealth for South Africa. Their shutting down would have meant the dismissal of 7,573 white men, and, as they spent £853,053 on wages and stores in January, 1923, would have brought about a far greater contraction of business and more extensive unemployment throughout the Union than exists to-day.

Real Remedy for Unemployment.

These figures show quite clearly how absolutely essential it was to reduce working costs from the high figure which they had attained in 1921. That has been done to some extent; the costs per ton in December last were 20s. 6d., while a year earlier they were 24s. 11d. But even this is materially above the pre-war costs of about 17s. per ton, and it is to be hoped that a further approximation to that figure may be attained.

It should never be forgotten that every reduction in costs, however small, means an addition to the quantity of ore which can profitably be mined, and therefore to the life of these fields. It is in this direction that the remedy for unemployment, so far as the mines are concerned, must be sought. As the Mining Industry Board stated, "The lower they (costs) are, the more extensive will be the field of employment for labour, the larger the consumption of stores and material, and the greater the revenue, both direct and indirect, to the State."

European Employes Increasing.

Exaggerated ideas are still being disseminated in regard both to the number of employes retrenched and to the reduction in wages. Ever since the termination of the strike, the number of European employes has been steadily increasing, and at the end of February was 17,025, as against 20,487 before the strike. The fact that an increased tonnage was obtained by a materially reduced number of men shows clearly that only redundant men have been discharged.

In this connection I may draw your attention to the fact that the accident death rate, during the year 1922, was, after liberal allowance has been made for the three months during which little work was being done, the lowest ever recorded, a fact which makes it tolerably clear that the results attained have not been due to any undue pressure of work.

Wages Average Over £30.

The average monthly cash earnings per man over all classes of European employes were, during December last, £31 4s. 8d., an increase of £4 over the figures for the year 1914. The amount actually disbursed in working costs during the month of December, 1922, was £2,171,949, again an increase of £303,790 over the same expenditure in December, 1914, although the tonnage is still 44,479 tons less than milled in the latter month.

I do not think that it can be said that such rates of wages are either inadequate in themselves or disproportionate to the ability of the industry to pay. Even last month, two mines made a loss and five others produced only a nominal profit, which any material increase in wages would have turned into a loss.

In spite of this position, we have received a demand from the mechanics' unions for an increase of pay of no less than 30 per cent. Such a demand cannot, of course, be granted; if it were, the industry would have taken a long step towards getting again into the same position from which it has recently, at terrible cost, escaped.

The Truth About Profits.

So much nonsense has been talked about the alleged enormous profits of the gold mines that it may be useful to direct public attention to a paper by Dr. Lehfeldt recently published in the "Journal of the Chemical, Metallurgical and Mining Society of South Africa." Dr. Lehfeldt, who is Professor of Economics at the Witwatersrand University, has, with the assistance of officials of the Mines Department, calculated the rate of profit yielded by the mines during the 15 years ending with December, 1921, and his conclusion is that the average return was 6.2 per cent. per annum.

Seeing the speculative nature of mining investments, that rate of interest must be described as inadequate rather than excessive. That I may not unduly discourage investors, I hasten to add that there is every hope of better results in the future.

Native Labour.

During the first three months of the year, owing to the industrial trouble, the mine native labour force was depleted by 51,000 natives. As soon as the troubles were settled, every effort was made to hasten the return of the natives, with the result that by the end of August, the native labour position was restored to normal.

Owing to the general depression in all industries in South Africa, which everyone hopes will only be of a temporary nature, a larger supply of British South African natives has been available for work on the mines. In order to avert any acute form of unemployment among British South African natives, the Chamber came to an agreement with the Union Government to reduce very largely the number of natives drawn from Portuguese territory. It would, however, be distinctly unwise to run away with the idea that the present native labour surplus is anything more than temporary. The same conditions obtained during the year 1916, but a very acute shortage of native labour was subsequently suffered by the mines, due to the activities of other industries which draw their native labour from the same sources as the mining industry.

It would be a very unsound and dangerous policy to allow our organisation for the recruitment of Portuguese natives to become disorganised. Unless South African industries are to remain in a permanent state of depression, which is highly improbable, there is no doubt that the native labour supply from British South Africa will not be able to meet their requirements, and the gold and coal mines will again be hard put to it to maintain an adequate native labour force.

Portuguese Efficiency.

There is another point which must be remembered in connection with natives from Portuguese territory. These natives are considerably more efficient than any others in certain classes of work. Even if their places could be filled by British South African natives, it could only be at the cost of reduced efficiency; and it is only by maintaining and increasing the efficiency of all mine workers that many of the mines can be made to pay expenses. In fact, the concession made in restricting, at the request of the Government, the number of Portuguese natives recruited via Ressano Garcia has already caused much loss and inconvenience to the industry.

Apart from the causes mentioned above, the cost of the W.N.L.A. organisation is in no way reduced by reducing the number of natives recruited. During the quarter ended on September 30, 1922, the first quarter in which the restrictions were in force, only 7,120 Portuguese natives were recruited, as against about 11,000 during a normal quarter; and the cost per native shift has risen from about 3.9 pence to 4.7 pence.

Important as the supply of East Coast labour is to the mines, it is possible to exaggerate that importance; and you probably read with some amusement a statement made in the course of the debate at Lisbon a fortnight or so ago to the effect that, if Portuguese natives ceased to come to the Rand, there would be insufficient labour to prevent the flooding of the mines. We are not quite so hard up for labour as all that.

Although the Mozambique Convention falls to the ground at the end of the present month, it has been arranged that Part I. of the Convention, dealing with the recruiting of Portuguese natives for the mines, shall continue in force as a "modus vivendi," subject to six months' notice of termination. This will enable the W.N.L.A. to carry on as usual, so far as the arrangements with the Portuguese Government are concerned.

Politicians and the Mining Industry Board.

At the last quarterly meeting I dealt fully with the report of the Mining Industry Board. Attempts are now being made by certain political sections to discredit the Board—attempts which will certainly recoil upon the heads of the makers. The astonishing thing is that any man of intelligence should take such a line. Do they entirely fail to understand the respect which the ordinary citizen has for the opinions of men like Sir William Solomon and his colleagues on the Board and the [illegible] which he has for the [illegible] of the new [illegible]?

The Session of 1922 has been [illegible] in that little legislation of special importance to the industry was passed. Parliament is at present [illegible] itself with a Corporation Bill, a Companies Bill and a Transvaal Gold Law Amendment Bill, and a Miners' Phthisis Bill is shortly to be introduced. The Chamber has made representations to the Select Committees dealing with the three former subjects and will naturally endeavour to secure some justice and moderation in dealing with the question of phthisis, qualities which have been markedly lacking in its treatment hitherto.

When I dealt with this subject last year, I pointed out the enormous liability imposed on the industry under the 1919 Act and its predecessors, and estimated it at £12,[illegible]. Since then, figures compiled by the Government Actuary show that the total outstanding liability for awards granted up to the end of [illegible] was alone equivalent to £[illegible] at [illegible] present value [illegible]. In other words, if every mine were to close down at the present time and [illegible] the [illegible], a sum of £[illegible] would be required to meet the liability of the awards already granted. It will be interesting to note that, on these figures and assuming the employment of some [illegible] white workers underground, the outstanding liability is equivalent to a capitalised amount of approximately £625 for each worker.

The principal reason for this large liability is the grant of pensions to the [illegible] and his dependents. It [illegible] that, although [illegible], their wives and children are normal [illegible]. The cost of providing these [illegible] to average women and children could not have been properly realised at the time the Act was passed.

Levy of £100 for Every European.

The Miners' Phthisis Board levies £[illegible]0 per annum from the Rand gold mining industry. This levy represents an average contribution of 6s. 4½d. per each white shift worked underground, or an annual contribution of £100 for each white underground worker. In the case of some of the richer mines, owing to portion of the levy being based on profits, the amount of the contribution is [illegible]. For instance, for every white shift worked underground, the New Modder and the Van Ryn Deep each contribute [illegible]; the Modder Deep [illegible] 3d., and the Meyer and Charlton 14s. [illegible]d.

In spite of this enormous and excessive burden already imposed on the scheduled mines, in each successive session suggestions are put forward from certain sections of the House for a still further increase, and for further retrospective application of the present legislation to cases which have been compensated in the past. I trust that members of Parliament will fully realise their responsibility in this matter and give any proposed legislation their careful and mature consideration.

It is, I hope, now recognised that the industry is making every endeavour to check the ravages of the disease amongst their underground workers, and I think I can further state that the risk of contracting [illegible], under present working conditions, by those workers who have been properly examined and passed as physically fit for underground work, has been largely if not wholly eliminated. When I come to deal with the work of the Medical Bureau, I shall give you some facts bearing on this point.

Shareholders Forgotten.

It is to me an extraordinary and [illegible] thing that so many members of Parliament [illegible] of all their dealings with the Mining Industry, to [illegible] the interests of the shareholders. Such a policy, in a country which will, for many years, be seeking capital for its development, appears to me to be particularly shortsighted in a legislature. I am not sure that it will prove to be so much in the individual interests of the member as it may now appear to be.

No doubt employes are a large proportion of the voters and voice their desires very loudly and decidedly. But shareholders also have votes, and there are very many shareholders in these mines resident in the Union. Long-suffering though they may be as a class, there are unmistakable indications that the attitude of their nominal representatives towards their interests is viewed with great and increasing indignation.

The Provincial Council also has been trying its hand at legislation, and has produced the Employers' Tax Ordinance. This is plainly directed at the mining industry as being the largest employers of labour in the Transvaal, and is manifestly a mere evasion of the Financial Relations Act of 1921. Such evasions will always remain possible while the Provincial Council retains its present extensive powers of taxation; and it is to be hoped that some curtailment of the scope of this mischievous and superfluous body may result from the report of the Provincial Finances Commission now sitting.

BANKS' HEAVY TOLL.

How Pretoria Mint Will Help the Mines.

Operations will begin at the Mint shortly, and it may be expected in a few months to meet all demands for local coinage. As soon as the premium on gold is less than the present costs of realisation, it will be open to the gold mining companies to have so much at least of their bullion as is required for local payments minted in Pretoria. A new position in the history of the industry will then be created. While, in the past, companies deposited their gold with banks for realisation in England, they will now, either directly or through the agency of the banks, obtain coined gold here.

This position, of course, alters the companies' relations with the banks, which for some time past have arbitrarily fixed rates of exchange and thereby levied a heavy toll on the mining industry. At one period companies were compelled to pay exchange at the rate of 8½ per cent. (the rate in normal time being about one-eighth per cent.) to obtain payment for their gold here; during the past year, the amount paid to the banks for exchange was something like £500,000.

Under the new conditions, companies need not pay any exchange directly to the banks. Refined gold will, presumably, be sent to England to meet commitments outside South Africa. What the effect of this will be upon the banks' selling rates in the future it is impossible at present to foreshadow, but it seems probable that the banks will have to bear the expense of exporting sovereigns since a portion of the mines' local payments will have to be exported to pay for imported goods.

Some months ago the industry established an agency for distributing reliable information bearing upon the interests of the industry. The hostile or, at best, indifferent attitude of the public of South Africa towards the mining industry (upon which every one of them lives, directly or indirectly) is largely due to ignorance and misrepresentation; and it is hoped that a fuller knowledge of the facts may do something to alter that attitude.

"Safety First" Movement.

The gratifying results achieved in the past by the Prevention of Accidents Committee of the Rand Mutual Assurance Co., Ltd., in its campaign against accidents on the mines, are still being maintained. I have already mentioned that the fatal accident rate for the Witwatersrand gold mines for the past year constitutes a further low record for these fields. It is 1.91 per thousand, as against 2.25 per thousand (itself a record) for 1921.

Omitting the first three months of the year when, owing to the strike, mining operations were suspended, the death rate per 1,000 per annum for the remaining nine months was 2.25. Even the latter figure is better than any earlier one, but it must be borne in mind that a certain number of accidents occurred during the first three months; moreover, the disorganisation due to the strike was also responsible for some. These factors more or less compensate for the period of suspension of operations; and for these reasons the Mines Department, as also the Prevention of Accidents Committee, have decided to accept the figure of 1.91 per 1,000 as the rate for the past year. The actual fatalities were 336 as against 441 for the year 1921, and 845 ten years ago.

So far as I can gather, our rates compare favourably with other parts of the world. In the United States the rate per thousand for 300 days worked in all mines was 3.43 in 1919; and in British Columbia in 1918 the rate was 5.16 for coal mines and 3.16 for metal mines. Our figures are, however, still above those of the United Kingdom, where, for the year 1919, the death rate from all accidental causes in coal mines was 0.94 per thousand; and in 1918, 1.38. This shows that there is still plenty of work ahead for the committee; though, with our great mass of unintelligent native labour, we can hardly hope to rival England. All concerned are, however, to be heartily congratulated upon the results so far achieved.

Propaganda and Prizes.

The committee, under the chairmanship of Mr. Frank Raliegh, continues its propaganda, persistently keeping the subject of "safety" foremost in the minds of the employes on the mines, both white and native. 5,000 copies of the magazine, "The Reef," are distributed gratis monthly amongst white employes, whilst bulletins and warning notices dealing with dangerous practices are being regularly posted up on special boards on the mines. A campaign against fires, underground and in the compounds, has recently been instituted with satisfactory results. "Safety" lectures and cinema films and the issue of "Safety" and health literature all do their share in minimising accidents, while the committee's technical experts continue to investigate safety devices and ideas.

The annual prize scheme competition, inaugurated by the committee in 1915, still continues. Cash prizes are given to the officials of the winning mines, and the managers are presented with certificates. The presentation of prizes to the winners of the competitions for the year 1921 took the form of a well-attended concert in the Selborne Hall on June 17 last, at which the Right Hon. William Brace presided. Mr. Brace was very much impressed with the committee's activities on these fields.

First aid and ambulance work continue to be an important branch of the "Safety First" movement, and with the co-operation of the South African Red Cross Society excellent progress has been made

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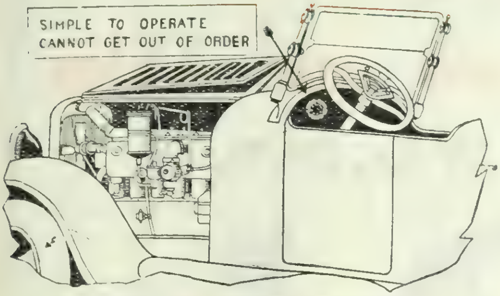
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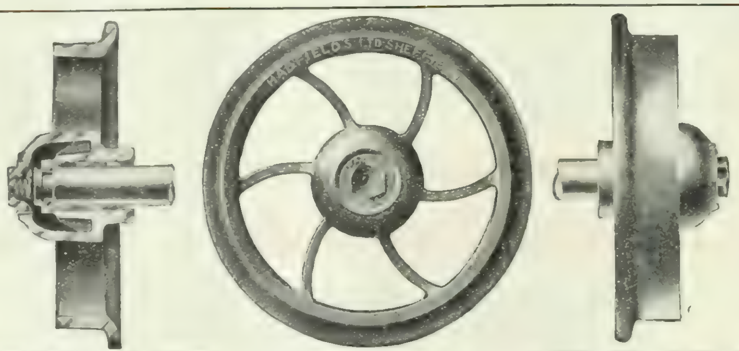

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during the past year. As the result of the elimination contests 23 teams competed last year in the district ambulance competitions. In the final competitions five teams entered for the surface shield, won by the Modder B, and seven teams for the underground shield, won by the Crown Mines. During the past year, similar competitions have been successfully inaugurated amongst natives. 23 teams competing in the district competitions and four in the final. In addition to these, many mines held their own local competitions. Mr. Brace, who attended one of the native competitions, expressed his surprise at the excellent work done by the natives, which he considered as good as any he had seen in the Old Country.

Valuable assistance has been given to the committee during the year by the officials of the Mines Department, headed by Sir Robert Kotze, by the Committee of Consulting Engineers, the Association of Mine Managers, the S.A. Red Cross Society, and other bodies.

Dust Sampling.

Four dust surveys of the mines were carried out by the Dust Sampling Department during the year. Seeing that, in 1914, the average dust content per cubic metre of air was 5.4 milligrams, this year's figure of 1.6 milligram is highly satisfactory. It is the same as last year's figure, which was then the best on record. A considerable amount of experimental and research work on the methods of dust prevention and detection was carried out during the year.

In the examination of mine air by the konimeter method of dust sampling, a puzling feature for many years has been the high results which were obtained from time to time in an apparently unaccountable manner. You will see from the report that it has now been discovered that the water used in the mines contains varying quantities of soluble salts, and when this water is atomized or sprayed into the air and a konimeter sample taken, these saluble salts crystallize on the konimeter slide in minute particles, which, when the slide is examined under the microscope, appear like particles of silica and are counted as such, thus introducing a serious source of error into konimeter sampling. Experiments have been conducted with a view to removing these soluble particles from the konimeter slide, and a method, suggested by Dr. Mavrogordato and others, has been tried whereby the slide is treated with acid vapour. The results are not yet conclusive, and work in this connection is being carried on.

Miners Phthisis Medical Bureau.

The work of the Miners Phthisis Medical Bureau continues to be carried out without friction either with the mine managements or the miners. The Bureau is still housed in the buildings of the South African Institute for Medical Research, anl enjoys this accommodation with all the attendant conveniences and facilities without charge to the Government. In each of the last two years, over 3,600 specimens were investigated in the laboratories of the institute on behalf of the Bureau, an assistance which would have been rendered with great difficulty it the Bureau had been situated elsewhere. This association of the Bureau with the Institute has contributed very largely to the successful administration of the former, and has also provided exceptional opportunities for research into the pathology of silicosis.

During the year which closed on the July 31 last, some 34,788 examinations were carried out, and about 24,000 X-ray negatives were prepared. When it is remembered that the records of each individual examined since 1916 are filed separately, one can appreciate the degree to which organisation has been carried in order to avoid confusion and delay.

Only One in 345 Health Warnings.

As reflecting the general condition of health of European mine employes during the recently closed year, it may be remarked that, out of the 13,457 miners who were examined, it was found necessary to warn only 59 as to the existence of an unsatisfactory state of health.

We hear from time to time that the liberal use of water which is required to mitigate the menace from dust is responsible for an undue prevalence of rheumatic affections; we are also told that experimental work carried out for the Imperial Medical Research Council indicates that Bright's disease should be of frequent occurrence among our miners. Neither of these pronouncements is found to be valid by the Medical Bureau; there is no undue prevalence of rheumatism, and Bright's disease is of distinct rarity.

The candidates for the initial examination for fitness for underground work numbered 4,394, of whom 61 per cent. were born in South Africa—the lowest percentage of South African candidates hitherto recorded. 2,067 candidates were successful; a number which greatly exceeded the vacancies for recruits.

Tuberculosis Rate Lowest on Record.

Among 13,457 miners who were periodically examined during the year, 22 cases of simple tuberculosis were detected, affording a rate which is not only extraordinarily low as compared with that of industrial males in Western Europe, but is also the lowest hitherto recorded at these examinations. This gives a prevalence rate of 163 per 100,000 miners—the lowest since the bureau began its work. It is also gratifying to find that, in an average complement of 160,600 native labourers, the 580 cases of simple tuberculosis detected was the lowest total hitherto recorded by the bureau. The annual prevalence rates for this disease per 100,000 of the native labourers since 1916 have been 576, 524, 458, 444, 480, and, for our last year, 361.

With regard to simple silicosis we have to distinguish between the prevalence rate, i.e., the relative number of cases existing among the employed or legally employable miners, and the production rate, i.e., the relative number of new cases originating during the year. The annual prevalence rates of this disease in the primary and secondary stages is, again, the smallest since 1916, namely 557. For the disease in the ante primary stage (its earliest detectable manifestation) the prevalence rate in the year 1919-20 was 3,633; in 1920-21 it was 2,353; and last year it was 2,667.

The production rates are, of course, more direct evidence of progress or the reverse. For new cases in the primary and secondary stages the annual production rates per 100,000, since 1917 have been 1,179, 2,538, 2,787, 126, and, for the last year, 37. For new cases in the ante-primary stage in the year 1920-21 the production rate was 1,630; and in the year reecntly closed, 1,888. Expressed in another manner, we may say that for each of the last two years the production of simple silicosis in its primary and secondary stages has been almost negligible, whilst some 16 to 18 men in every 1,000 have developed the earliest detectable signs of it.

No case of silicosis in the second stage has been produced among the miners since the year 1918-19; and, of all the European recruits to the industry since September, 1916, who have started mining for the first time after passing the initial examination of the bureau, not one has become silicotic in any form or stage up to to-day.

Amongst the native labourers, simple silicosis in the primary and secondary stages has prevailed at the following rates per 10,000, in each year since 1916: 47, 17, 27, 29, 28 and, in the last year, 4. The prevalence rate for the disease in its ante-primary stage has been in 1919-20, 41; in 1920-21, 51; and in 1921-22, 23.

The condition of tuberculosis with silicosis has been produced amongst the miners in each of the years since 1917 at the following rates per 100,000: 860, 842, 163, 124, and, in the last year, 178. Amongst the native labourers it has prevailed, since the year 1916, at the following annual rates: 131, 128, 219, 220, 163, and, for the last year, 126.

I think that these figures amply justify what I said above as to the successful efforts which the mines have been making to minimise the occurrence of silicosis.

Institute for Medical Research.

During the year which is now being reviewed, the Institute of Medical Research has continued its services to the industry and to the public at large. The number of specimens investigated and reported upon in the routine division reached the record total of 27,438. The doses of various vaccines and sera issued to mines totalled 642,000, and included 492,000 doses of prophylactic pneumococcal vaccine, and 8,800 doses of prophylactic typhoid vaccine.

In this connection it may be remarked that the death-rate from lobar pneumonia amongst the natives in labour districts during the year 1922 was 1.68 per thousand—the lowest rate on record with us; whilst that due to all diseases was only 11.28 per thousand, a rate which closely approximates to the record rate of 11.04 in 1917. In the Research Division, experimental work has been pushed forward in connection with cerebro-spinal meningitis, influenza, bilharziasis, flagellate diarrhœa, mercurial poisoning, and silicosis. The immunisation of human beings against enteric fever without inoculation, and the problems of the efficient ventilation of mine workings have also received much study.

In the last two annual reports of the Institute, the director has stated that the maximum amount of research work possible with the present financial resources is being carried out. As I mentioned two years ago he is very anxious to establish a systematised and sustained research into the specific prevention and cure of tuberculosis, a disease which stands in the front rank of the enemies of mankind. Those of the members of the Board of Management of the Institute who represent the industry are in full accord with this project. The income available for research is contributed in equal moieties by the industry and the Government; but as the Goverument's share is limited to a maximum of £5,000 yer annum it is evident that further development in the research work of the institute under present conditions is almost impossible.

It is suggested that some special arrangements are called for in order to enable the institute to start upon the work of tuberculosis research without further delay. The Director of the Institute points out that the disease is of the greatest interest and importance to the industry, for, quite apart from the special susceptibility of the native labourers to tuberculosis, the invalidity associated with silicosis is almost entirely due to a superadded tuberculous infection. With the discovery of a specific preventive and cure for tuberculosis, Dr. Watkins Pitchford believes that the greater part of our financial liability on the score of silicosis, in so far as it relates to the living man, would disappear. In the interest of the public at large, the Government might well make a special grant to be devoted to this purpose.

Pending Appeals.

The appeal case against the Rand Water Board, to which allusion is made in the report, was heard at Bloemfontein last [illegible] and judgment reserved. In these circumstances I am precluded from making any comments on this subject.

Another case of great importance to holders of [illegible] and [illegible] is also sub judice. The Registrar of Mining Property has contended that [illegible] which he has declared to be mining property [illegible] Acting on legal advice [illegible] have refused, pending the judgment of the Appellate Division, to comply with his demands, unless he is in physical possession of the [illegible] for which he [illegible] new title.

Rand Refinery.

For several years past the annual report has made reference to the building of a refinery. During the early part of 1922 building operations were completed, and since the resumption of work after the strike the refinery has dealt with the whole of the gold produced on the Witwatersrand.

The refinery is admitted to be the finest of its kind in the world and the methodical way in which the large quantities of gold and silver are now being treated and handled by the refinery is a credit to all concerned with its establishment and running.

You may be interested to have a few particulars of the refinery's operations. At present, there is being refined at Germiston a total of over eight million ounces of fine gold per annum, nearly 60 per cent. of the world's gold production. All the refining is done in an eight-hour day. In addition to gold, silver to the amount of approximately a million ounces per annum is extracted from the bullion and refined.

From a financial point of view the refinery is conducting its work at a saving, as compared with the charges for the same work in England, and, in addition, is meeting all capital charges.

Railway Transport Suspended.

The refinery is about to extend its service by collecting, with its own vehicles, gold from mine offices for transport to the refinery. The decision to install this service was made some months ago, as it was considered that the railway service was unsatisfactory, and that due precautions for safety were not carried out. Unfortuntely, the refinery service was not ready in time to prevent the recent disappearance of three bars of gold whilst carriage was being undertaken by the Railway Administration, but the incident affords us the opportunity of congratulating Major Trigg upon his department's prompt recovery of the greater part of the missing [illegible].

Co-operative Smelting Works.

The Witwatersrand Co-operative Smelting Works has done excellent work during the year. The gold concentrates in [illegible] sent for treatment have in many cases become more refractory than in the past. The committee of metallurgists in charge of operations have conducted a large number of experiments with a view to meeting the greater difficulty in extracting the precious metal contents. As a result of these experiments the company is now enabled to treat practically any class of refractory ore, has increased the percentage extraction and incidentally has recovered certain quantities of the valuable metals of the platinum group.

The shoes and dies branch of the works has removed to a new site and increased its capacity from 100 to 200 tons per month. The directors have recently decided to increase the capacity by the installation of an arc furnace. The operations of this branch have resulted in large savings to members.

Miners' Training Schools.

As you are aware, there are two schools, conducted jointly by the Government and the Chamber for the training of youth who desire to take up the career of mining one on the Wolhuter Mine and the other on the Modder B. The Mining Industry Board sat last year and asked for a statement of the work being done, and officials of the schools and of the industry appeared before the board. In its report the board stated:—

The only criticism we have to make of the Government Miners' Training Schools is that there are not enough of them. Under conditions prevailing in South Africa, where the white man supervises and the native does the work, it is manifestly impossible to train young miners, as is done elsewhere in the world, by letting them work under the direction of a father or friend. The white lad in this country refuses to do what is termed 'kafir work' alongside of the native, and since he can only learn, in the true sense of the word, by actually doing the work, conditions have to be created under which he need not be associated with the native in doing so. The Government Miners' Training Schools seem to have solved this difficulty satisfactorily, but they require to be extended to supply the demand more adequately. Since a well trained miner saves the industry a great deal of money, as compared with the unskilled miner, the money expended on the training is considered well spent."

Gold Production Improving.

The Report shows a considerable decrease in the output of gold for 1922 as compared with 1921; but this is, of course, due to the virtual suspension of operations for nearly three months at the beginning of the year. When this is allowed for, it will be seen that the rate of production during the working period of last year shows an improvement upon that of 1921.

Collieries Want Customers.

Unfortunately, the same cannot be said of the collieries. With them, the difficulty is not to produce the coal but to sell it. The decrease in tonnage sold last year was 1,567,000 tons; and the average pit's mouth price fell from 6s. 7.52d. per ton to 5s. 7.28d. Apparently the tendency is towards a still lower price, as that of January, 1923, was only 5s. 3.34d.

The inability of the coal trade to recover to anything like its previous figure is a very disquieting feature. The decrease is spread over all classes of trade, but the greater part is attributable to export trade, railway and industrial requirements. The decrease in the shipping trade is very heavy and amounts in all to some 500,000 tons.

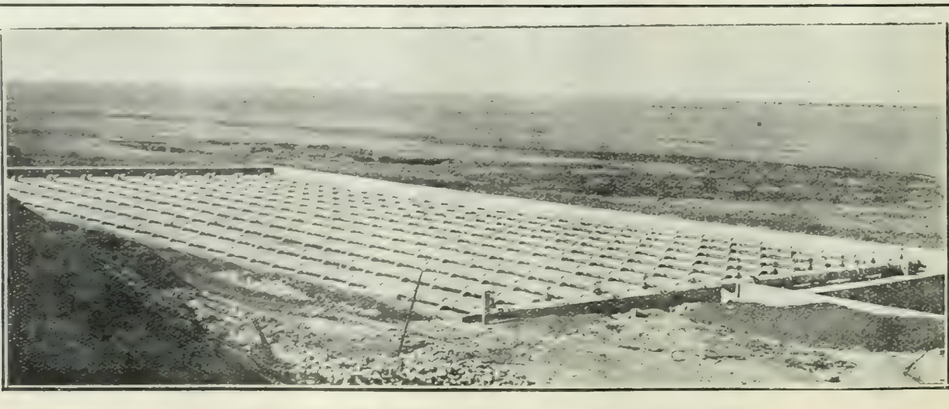
There are various factors which influenced this great drop, but the chief of them were the extreme competition that ensued after the coal strike in England in 1921 and the heavy sea freight from Union ports. In the early part of 1922 the collieries of the Transvaal lost their opportunity of quoting for forward business and, when they became in a position to do so, the demand for fresh business was very limited and competition very keen.

Railways' Reduced Requirements.

The railway requirements show a large reduction, which reflects the depression in trade in South Africa during 1922. Industries also show a heavy fall in coal requirements, and there are small shortfalls in other directions. Generally speaking, while it is probable that the coal trade will improve, it is feared that it will be a slow and gradual process.

So far as the inland trade is concerned, it is as well to recognise that to a certain extent this reflects the general position of the internal industries and trade of the country; and it is disappointing to find that there are no signs of improvement in this respect.

In conclusion, I should like to thank the Vice Presidents who undertook my work during my absence in England and to place on record once more my ever-increasing admiration for the keenness and efficiency with which the officials and staff of the Chamber carry out their multifarious and, in many cases, extremely difficult duties. I move the adoption of the report and accounts.



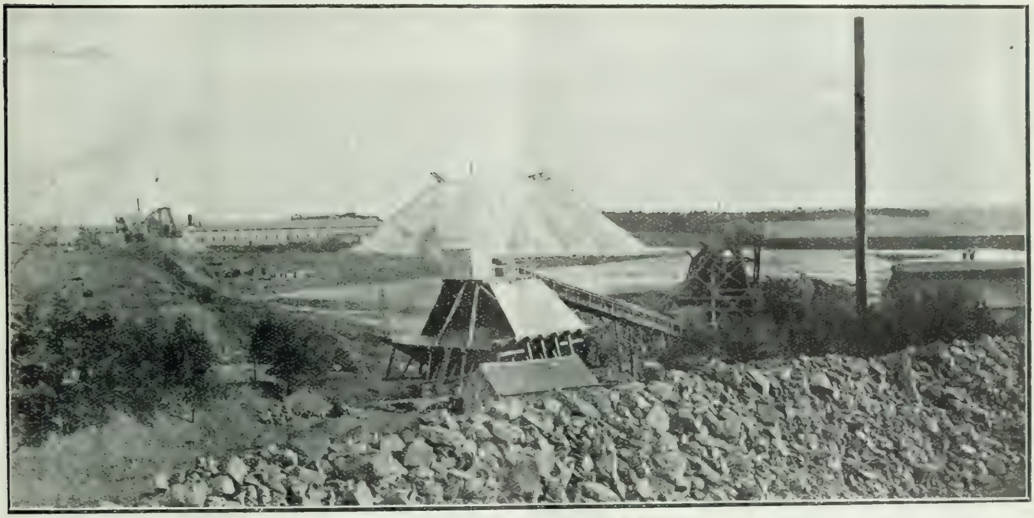
The Hume Pipe in Mining Service on a Far East Rand Mine.

THE SOUTH-WEST AFRICA DIAMOND INDUSTRY—LATEST RAND TRAGEDY—
RHODESIAN MINING PROSPECTS—SHAREMARKET ACTIVITY.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

VOL. XXXIV., PART I. JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 7, 1923. No. 1645.

Scenes at the New Kleinfontein



New Kleinfontein Nos. 1 and 2 Shafts.

The Easter holidays on the Rand were saddened by an accident at the No. 2 Shaft of the New Kleinfontein, whereby two white miners, Messrs. Gray and Pearse, and eight natives lost their lives.

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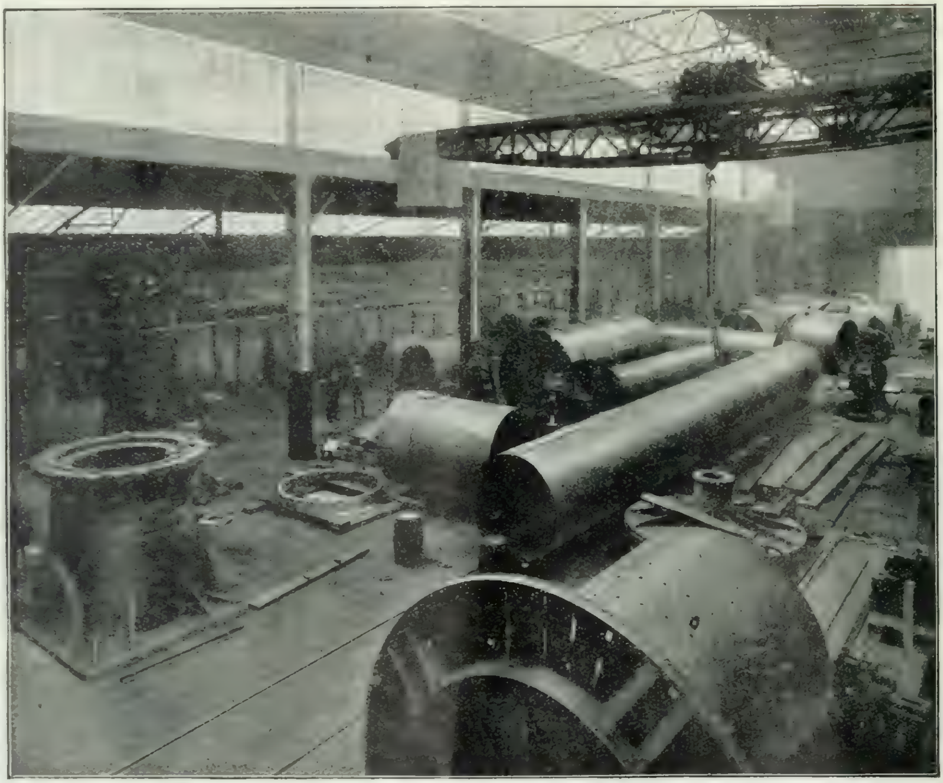

View of Work in Progress.

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The South-West African Diamond Industry.

REVIVAL OF ACTIVITY ON THE LUDERITZ LITTORAL—C.D.M.'s ALLOTMENT 21 PER CENT.—WORKING UP TO 15,000 CARATS OUTPUT—A LIFE OF 50 YEARS ?—THE VARIOUS COMPANIES AND WHAT THEY ARE DOING.

(By our Special Commissioner).

Diamond winning in the South-West African Protectorate, like the diamond industry in other parts of Southern Africa, has been under a cloud of depression until just recently, when in consequence of the much improved outlook there has been a revival of activity. The story of the discovery of diamonds on the coastal edge of the Namib Desert 15 years ago has already been told in the columns of this journal, and the curious geological characters and outstanding economic features of the South-West African diamond industry have on previous occasions been commented on. It is not, therefore, proposed to deal with these aspects of the gem-winning activities of the South-West African Protectorate, but rather to record a few impressions gained by a visitor at a time when the industry is being revived and the various undertakings, led by the Consolidated Company, are preparing to take full advantage of the much improved demand for diamonds.

The Chief Concerns.

The principal companies operating along this diamondiferous area are:—

(a) The Consolidated Diamond Mines of South-West Africa—an amalgamation of various diamond mining interests which had been floated and were operating prior to the war, including the K.B.G., Pomona, Elizabethbucht and Bogenfels areas.

A Scene on the S.-W. Diamond Fields.

(b) The Kolmanskop Diamond Mines, operating in the vicinity of Charlottenthal, near Luderitzbucht.

(c) The Namaqua Diamonds Company, which is now being refloated with a capital of £350,000.

(d) The Praagh South-West African Diamonds Concession, in which Messrs. Lewis and Marks are understood to be interested.

(e) The South-West Diamonds, in which Johannesburg interests are involved, and which obtained a certain amount of notoriety in 1919 on account of the sensational rise in the price of the shares and the dredging episode.

In addition to these there are various small syndicates and minor interests.

The " C.D.M."

By far and away the most important of these larger concerns is the Consolidated Diamond Mines of South-West Africa, which was constituted as one large Company under the auspices of the Anglo American Corporation after long and protracted negotiations in which Sir Ernest Oppenheimer, Mr. H. C. Hull and others took a prominent part. Before the outbreak of the war the various enterprises now constituted in the Consolidated Diamond Mines were working as independent concerns; but even before the war it was evident that the most effective and economical method of working the fields would be by linking up these various concerns.

Half a Century of Life.

This has been successfully achieved, and in consequence of the placing of the various areas under one administration, with centralised plants, it has been practicable to work lower grade deposits. For this and other reasons—recent discoveries, for example—the "life" of the fields, which was strictly limited on a basis of selective mining such as was practised in the pre-war regime, has been greatly extended. Any estimate as to life must, of course, be very rough and approximate, but it is now considered that the fields controlled by the C.D.M. Company are likely to be productive for not less than 50 years.

Plant at Kolmanskop.

Power.

The power plant which operates the C.D.M. Company's equipment is situated close to the landing stage at Luderitzbucht and is housed in a large and substantially constructed building which constitutes an outstanding feature of the town. This plant supplies power not only to the various properties and equipments under the control of the Company, but also lights the town of Luderitz. A portion of the existing equipment was erected during 1913, and on the outbreak of the European War a considerable amount of machinery had been delivered but was not at that time erected. This machinery was assembled during 1915, 1916 and 1917 and increased at various times, and now consists of two 1,000 h.p. generators, two of 600 h.p. capacity and one of 150 h.p. The equipment is operated by suction gas engines using Natal anthracite.

The erection of a further large plant at Elizabethbucht, 30 kilos south of Luderitz, is under consideration, and should this be installed further plant will probably be erected at the Luderitz station.

This Elizabeth Bay plant will to a large extent be made up of the equipment of the " [illegible] " plant, which lies a hill or two from Kolmanskop. It is at present idle, operations here having been completely arrested by the war.

A Wind-swept Dreary Littoral.

From Luderitzbucht to the Kolmanskop property is a distance of about nine miles. The rough road which winds through the sand past wind-swept ridges and curiously stratified rocks is well known to many Union soldiers who spent the first portion of the South West African campaign in this dreary littoral of the Namib desert. After four or five miles the road crests a rise, from which Luderitz may be seen in the near distance, and after breasting the next rise the solidly well-built houses and offices at Kolmanskop may be observed.

The Central Plant.

The diamondiferous deposit is transported by Bleichert aerial ropeway and tipped into bins. From these it is automatically fed into preliminary breakers, rolls and sieves. Sizing operations are conducted in trommels and Siechiel separators. These latter machines have been developed by the South-West African diamond industry and have proved most efficacious for the recovery of the gem stones from the diamondiferous gravels.

The C.D.M.'s Allotment.

The percentage of output allotted to the Consolidated Diamond Mines by the controlling selling syndicate is 21, and it is expected that the company will work up to an output of 15,000 carats per month in the next few months.

Another Scene on the South-Western Fields.

Kolmanskop.

Near Kolmanskop is the central plant, and close to the offices and living quarters are very well equipped workshops, carpenter's shops and blacksmith's shops, etc. An electrically operated railway runs from the Kolmanskop headquarters to the various points where the diamondiferous ground is being exploited and into the central plant. This line is of 60 centimetre gauge. Water is pumped from Elizabeth Bay along the diamond fields by means of pumps electrically operated by H.T. current. Fresh water also is brought to Kolmanskop from Garub, near Aus, on the Keetmanskoop line. Water is therefore an expensive item; on these fields the costs is about 15s. per cubic metre. Further expansion of production will, of course, in large degree depend on the state of the diamond market. Other considerations which must determine the company's activities are these relating to native labour and material. There is no coloured labour to be found in this dreary Namib bittoral, and the company is therefore dependent almost entirely on Ovambo labourers from the north. As to material, all foodstuffs have to be imported, and in regard to stores and machinery, etc., the recent heavy washaways in the Protectorate have materially hampered the company's operations. At the moment of writing, over 1,000 tons of material for the company are isolated at various stations between De Aar and Luderitzbucht.

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The Cement Industry in Other Countries.

The following information regarding Cement making and trade in certain other countries is abstracted from "The Mineral Industry."

Canada.—Production of Portland cement in Canada during 1921 showed an increase over that of the preceding year. The output for 1921 was 2,723,072 bbl. as against 2,035,594 bbl. in 1920. Ontario produced the great bulk of cement, although a number of makers in Quebec and New Brunswick reported appreciable quantities. At Owen Sound a new plant with a capacity of 3,000 to 4,000 bbl. per day has been erected. The cost of manufacture in Canada is somewhat less to-day than in 1920, but even now labour, coal, materials, and supplies are from 125 to 150 per cent. greater than in 1914.

Ceylon.—Investigation as to the Portland-cement making resources of Ceylon has been under way. The main difficulty encountered is the high price of coal, and the possibility of developing a small hydro-electric plant is being studied. There is the further interesting statement that investigation as to the suitability of cocoanut shells for fuel is under way.

China.—There are six Portland-cement plants operating in China at the present time. The daily capacity of these plants runs from 350 to 3,000 bbl., and the average local price is between $6.50 and $7.50, Mexican, per bbl. of 375 lb. Ho Hong Portland Cement Co., near Singapore, Straits Settlements, has a plant thoroughly American. It uses the calcium carbonate from coral which is pried loose by Chinese coolies, loaded into barges, and towed to the plant. The plant was started by American engineers with an American chemist in charge of the laboratory. It has an output of 800 bbl. per day.

Congo.—A new Belgian company with a capital of 10,000,000 francs has been organized to build a plant at Katanga, in the Belgian Congo.

Dalmatia.—At the present time there are six cement plants in Dalmatia with a combined output of 500,00 metric tons per year. The locality is an ideal centre for the industry, as the raw material not only lies close to the coast but it is of very good quality. Despite the high price of coal, profits varied from 25 to 40 per cent. during 1919, the year production started. The industry is under the control of Italian capital with reports that English capitalists have begun negotiating for the purchase of some of the largest factories.

England.—At a meeting of the Associated Portland Cement Manufacturers, Ltd., a set-back in the trade during 1921 was ascribed to the disastrous effects of the coal strike, the inability to compete in the overseas market with continental manufacturers, the latter due to depreciated currencies, and the Government change of policy regarding its housing schemes. Necessity for writing down the value of stocks also affected profits. Owing to the high cost of coal there is no immediate likelihood of the price of Portland cement receding to the pre-war figure. The above company is acquiring the works of the Kent Portland Cement Co., Ltd., this plant having cost £2,000,000. It has a capacity of 3,000 tons per week. It is intended to form at an early date an Indian company to take over the cement works which the company together with the British Portland Cement Manufacturers, Ltd., is erecting in India. The British Portland Cement Co., owned by the Associated Manufacturers, showed a net profit in 1921 of £214,212 as against £323,406 in 1920.

Finland.—Finland has only two cement works. It is estimated that production in 1920 amounted to about 400,000 bbl., resulting in greatly decreased exports. The outlook for the current year indicates enough cement to more than fill home requirements, leaving a surplus to be exported.

France.—During 1921 there was a remarkable revival of the cement industry in France, especially in the northeast. The restoration of devastated provinces was the prime factor in the increased demand.

Germany.—The outstanding feature of the German Portland-cement industry has been investment of capital in excess of the actual requirements. Before the war production capacity was estimated at 12,000,000 tons, whereas actual output in 1913 amounted to only 7,500,000 tons. The productive capacity has been lowered since by the loss of 500,000 tons constituting the annual capacity of works located in territories ceded under the terms of the peace treaty, and by a further 1,750,000 tons representing the capacity of shut-down plants. Annual production is now estimated at 4,000,000 tons.

Protection against new domestic competition is afforded by government decree promulgated in 1916, prohibiting erection of new or extension of existing plants. This virtually confers a monopoly upon existing works. The German industry comprises eight main sections grouped according to the principal production centres. Prices reached a maximum in the spring of 1920 at 4,061 marks, but were reduced by 661 marks in August and again by 200 marks in November. Present prices are 3,616 marks for the Northern Association, 3,426 marks for the Rhenish-Westphalian Association, and 3,769 marks for the Southern Association. The further development of the industry depends largely upon increasing production and reducing overhead expenses.

India.—A new cement works is projected in British Malaya with a capacity of 30,000 to 40,000 tons per year.

Japan.—Talk of a cement combine in Japan is being renewed, though nothing definite has developed along that line. The demand for cement is good and an increase in price appears to be warranted. During 1919 the production of Portland cement reached 6,500,000 bbl., produced by about twenty companies employing 7,000 labourers. During the war Japan secured a new cement market in Java, but doubt as to holding it exists.

South America.—Special reference has been made to Brazil and the rehabilitation of the German cement trade in that country. Taking South America as a whole, imports of Portland cement from the United States show marked decline, with the exception of Bolivia. In that country the value of Portland cement imported from the United States in 1921 amounted to about $93,000 as against a little over $28,000 in 1920. The decline in the value of imports from the United States in other countries was as follows:—

Country	1920.	1921.
Argentina	$861,217	$114,172
Brazil	1,555,124	134,780
Chile	314,977	38,686
Colombia	557,012	276,034
Ecuador	85,548	21,504

Spain.—A new Portland-cement works is under construction at Bilbao.

African Portland Cement.

This Company was floated some time ago with a view to establishing a cement making industry in the vicinity of Port Elizabeth. It is understood that the first property acquired has not been satisfactory and attention is now being directed to another proposition. No exact information is available as to the Company's financial position.

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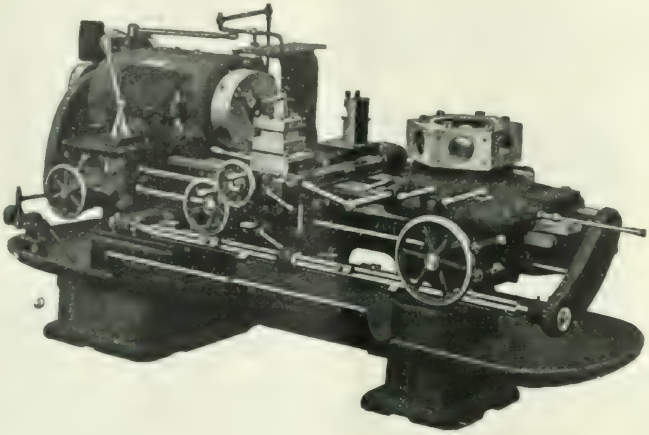

An Exhibition and Demonstration

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March Output: Group Returns.

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining Rand Mines group for the month of March, 1923:—

Company	Tons Crushed.	Yield in Fine Gold oz.	Estimated Value.	Estimated Profit.	Estimated Working Cost per ton.	
City Deep ...	96,000	39,775	£169,624	£52,241	21	5
Con. Main Reef	51,000	19,205	81,620	11,564	27	5
Crown Mines .	221,000	69,825	296,760	73,968	20	1
Dur. Rood. Dp	33,500	11,356	48,263	4,628	26/	0
E.R.P.M.	137,000	32,294	137,100	*9,128	21	4
Ferreira Deep	32,900	9,269	39,395	5,813	20	5
Geldenhuis Dp	56,970	14,281	60,605	814	20	11
Knight Central	35,000	7,335	31,176	4,455	15	3
Modder B. ...	64,500	32,270	137,661	68,359	21	5
Modder East...	27,200	12,208	51,611	16,767	25	7
New Modder .	113,000	53,329	226,870	132,693	16	8
Nourse Mines .	49,600	15,210	64,562	6,810	23	3
Robinson	15,600	4,480	19,038	5,955	16	9
Rose Deep ...	55,300	13,930	59,157	11,935	17	0
Wolhuter ...	34,400	8,220	34,855	2,343	18	10
Village Deep .	57,000	17,829	75,774	7,092	24	1
Tls. & avgs.	1,079,970	360,816	1,534,071	396,309	21	0

*Loss.

Village Deep, Limited.—Low profit due to renewal of shaft equipment, occasioning delays in hoisting and additional expenditure. April results will also be affected.

General Note.—The valuation of gold has been taken at £4 5s. net per fine ounce.

ANGLO-AMERICAN GROUP.

The following are the results of operations for the month of March, 1923

	Tons milled	Working Cost per ton milled s.	d.	Value of Gold Declared £	Yield per ton s.	d.
Brakpan ...	56,500	24	3·2	103,104	36	5·9
Springs	50,200	22	9·4	103,125	41	1·0
Totals & Averages	106,700	23	6·9	£206,229	38	7·9

	Working Profit based on standard value of Gold Total £	per ton s.	d.	Estimated Premium taking gold at £4 7s. per fine oz. less Exchange on Remittance £	Total Estimated Profit £
Brakpan	34,544	12	2·7	866	35,410
Springs	45,929	18	3·6	868	46,797
Totals & Averages..	£80,473	15	1·0	£1,734	£82,207

NOTE.—Brakpan: The decrease in profit for the month was occasioned by a breakdown on the 26th March of the electric winding engine at No. 2 Shaft, which reduced the tonnage by 10,000. Repairs have been completed and hoisting was resumed on the 2nd April.

Rand Carbide, Ltd.

This local industry has developed marvellously during the past couple of years, and is now supplying over 300 tons of carbide per month. The gold medal awarded the firm was well deserved, and their stand at the Show was well patronised, mining people showing a keen interest in their excellent display.

The Griffin Engineering Co. exhibited, among other things, a "Bulldog" tractor, which, without a magneto or radiator, has a power driving pulley which can be put into gear when required.

Messrs. Blane and Co., Ltd., showed a fine range of Crossley gas engines. This exhibit was much appreciated by experts.

Messrs. Haggie, Son and Love, of the Jupiter Rope Works, Cleveland, near Germiston, exhibited some very fine steel wires, ropes, etc., and were awarded a gold medal for their very fine display.

The Cape Explosives Works, Ltd., were again awarded a gold medal for their fine exhibition of dips and chemicals and a first-class diploma for fertilisers—both of which, in the opinion of experts, fully deserved.

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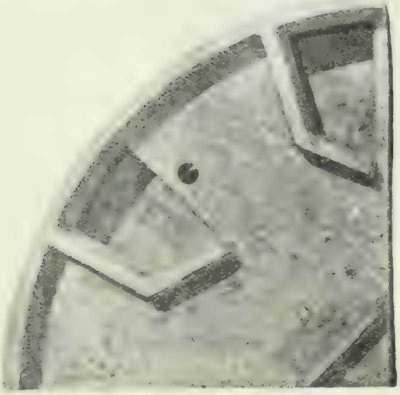
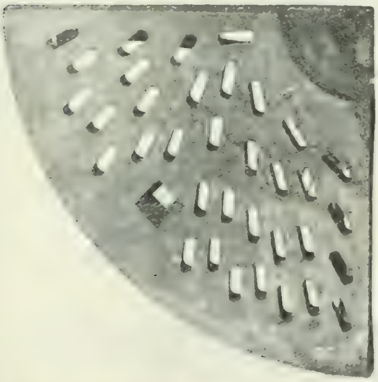
African Iron and Steel Products, Limited.

This company last year, for the first time of showing at the Witwatersrand Agricultural Show, won a second-class diploma. This year they were awarded a first-class diploma, which carried full marks for quality in the industrial section, being one of the few gaining this distinction.

The company's exhibits at the Show consisted of specialities including Nos. 1-7 of these special lines in tube mill liners. No. 1 is their patent positive scoop discharge, designed to get the utmost capacity from the tube mill, being the only discharge with a positive action. The company has found that the worn area gives exceptionally satisfactory results and is now being largely used.



No. 1



No. 2

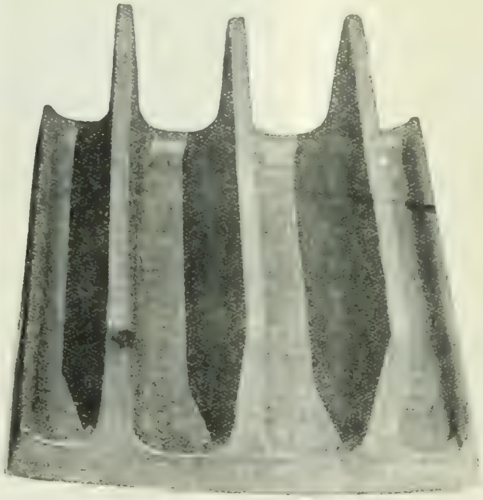
No. 2: This shows the company's type of grid which is being made in conjunction with the positive scoop discharge, the feature of which is the placing of tangential holes, which gives a larger area and a cutting action which prevents the holes choking. This is recognised by the mines as a great innovation and one of great practical value.

No. 3: Old style or Sheeley liner. This has been largely replaced by the Company's later productions. This liner was superseded owing to the bad spacing when assembled in the mill, every third space being out of proportion to the others and not retaining the pebbles.

No. 4: This liner is giving the company very excellent results and is now largely replacing the steel bar. The company showed amongst its exhibits at the Show several worn sections of this liner which had just been removed from a local mine after being in use for 310 days. The company finds that in actual experience this liner absorbs very little gold, the advantage of which it is hardly necessary to dilate on.

No. 5: This illustrates a single block of the improved tube mill liner (No. 4), which is supplied in 4 in., 4½ in. and 5 in. bars, in lengths of 20 in. and 21 in.

No. 6: This is a specially improved tube mill liner of new design. The illustration demonstrates the utility and strength of this particular design. The liner was designed to meet special requirements of heavy grinding mills. Though not yet supplied to any of the mines, it has been very favourably commented upon by engineers and reduction officers. The ease with which these liner blocks are installed is chiefly due to the regularity in size of the blocks, as they are all made by machine moulding. Another advantage of the company's liner is its flexibility, thereby meeting the defects of a worn tube mill shell. Further, in practice great saving has been found over the steel bar in the running costs per day, and the quickness with which the liner begins to grind, as proof of which the company has had a substantial increase in sales and is now adding to its plant to meet the demands.

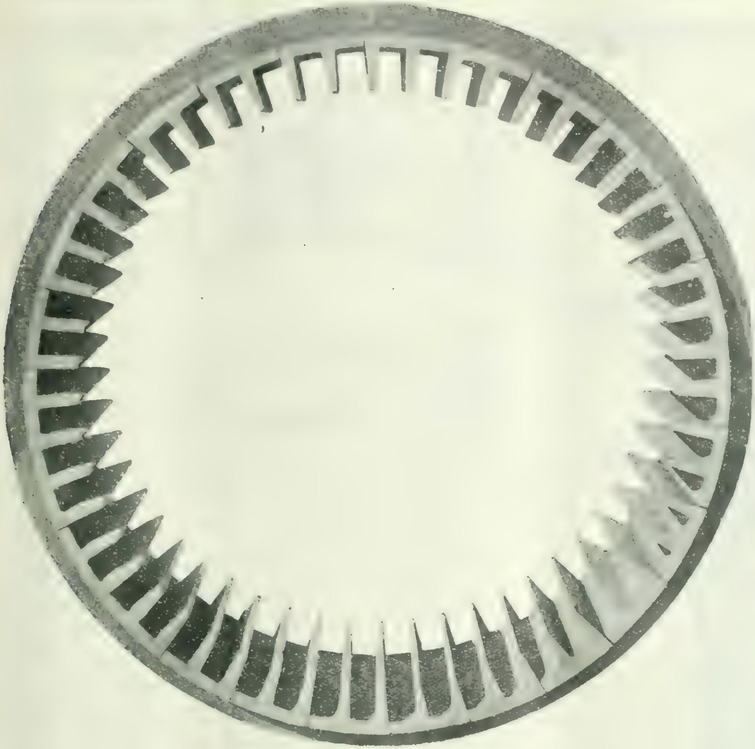


No. 3.

No. 7: This type of end liner was evolved by the company to meet all requirements by giving a maximum life with a minimum amount of metal. In use it has proved its value.

The company's exhibits at the Show aroused great interest, and the manager, Mr. W. Martin, M.I.Mech.E., had a very busy time explaining the various features of the company's productions.

From the mass production point of view, their exhibits, such as truck bearings, grids for grease traps, idler rollers for conveyor belts, and balls for grinding barrels, etc.,



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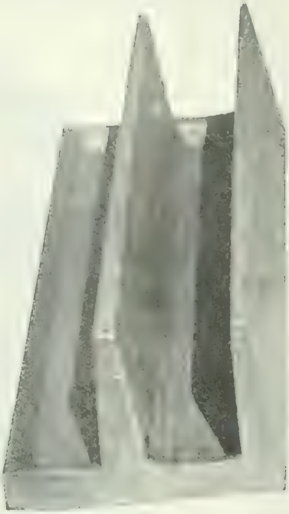
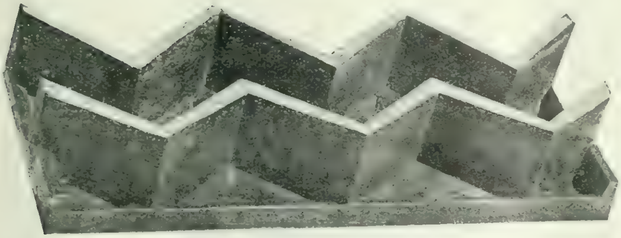


No. 5



No. 6.

show great enterprise. The company pursues a progressive policy and is always carrying out experiments with a view to keeping pace with modern mining and tube mill practice. Their efforts are being well repaid by the increased patronage of the reef mines and outside districts, and their work is always being favourably commented upon.

Owing to the close supervision by the manager at the works, the company's products are always of an uniform grade. Casting is done every day and from each cast a number of test bars are taken and closely examined for uniform quality, and if not satisfactory the whole of the castings are discarded.

A visit to the African Iron and Steel Products, Ltd., works at Denver is a pleasant surprise. On entering, one finds piles of castings ready for despatch from the company's private siding, and, on going through the works, one is struck with the up-to-date methods employed. For a local industry, built up entirely by its own efforts and merit of its productions, the company deserves unstinted support.

No. 7

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The Week in the Sharemarket.

BUSINESS MORE CHEERFUL—ANGLO-AMERICANS AGAIN THE FEATURE—DIAMONDS ACTIVE.

Business resumed after the holidays with the market in rather a more cheerful mood. The stocks of the Anglo American Group have again been the feature, with considerable business in Anglos, West Springs, Brakpans and Springs Mines. The improvement has continued up to to-day, diamond shares being active, notably Consolidated Diamonds, which have been the medium of large business, and look like improving still further. Of the gold stales, Gedulds have improved, and should continue to do so as the time for feeling the benefit of the additional plant approaches. Government Areas have also hardened, with very little buying. Randfontein Estates also reflect the better disposition of the market, and have had considerable business. Crown Mines have improved and the outlook there is said to be good. Satisfactory values are being shown beyond the dyke. The monthly profit will probably go slowly up. Nourse have been a steady market and an improvement is expected there soon. Diamond shares have been active, West Ends attracting some attention. The price seems high for a 5s. share, but the optimists are still talking these shares higher. Consolidated Diamonds took most of the business and a satisfactory rise is recorded. The undoubted potentialities of this share make it a very attractive market. Crown Diamonds have been sticky, but the mine will be a payable proposition, which means everything to shareholders. Monteleos are not quite so good as they were, but it is said this property has a chance of turning out quite well. The African Guarantee and Indemnity shares were introduced on the market on Thursday, but only a nominal price was made. Industrials have been quiet. Loans and Banks had the usual investment business, National Banks being inquired for at one time. Reserve Banks are the turn lower owing to small selling orders. The general tone of the market is distinctly more optimistic. It is recognised that some support may shortly be coming from the Houses in aid of their various guaranteed issues. Some relief in the matter of costs is expected as excess development tails off. There is very little time business open and a good deal of money about. A more favourable disposition is being shown towards Kaffirs by the London market

	Thurs. 29th.	Tues. 3rd.	Wed. 4th.	Thurs. 5th.
Anglo-American Corporation	26 0	26 0	26 0	26 1½
Apex Mines	—	6 0*	6 6*	6 0*
Brakpan Mines	68 6*	68 0	68 6*	69 3
Brick and Potteries		2 6*	—	3 6
Bushveld Tins	0 3*	0 3*	—	0 4*
Cinderella Consolidateds	3 6*	3 6*		
City and Suburbans	2 10*		2 10½	
City Deeps	48 6*	48 9	49 0	49 3
Clydesdale Collieries	17 6†			—
Consolidated Diamonds	24 1½	24 7½	24 9	25 7½
Consolidated Langlaagtes	13 0*	13 6*	13 6	13 0
Consolidated Main Reefs	11 4*	11 6	11 0	10 9
Coronation Collieries		24 0*	24 0*	24 0
Coronation Freeholds	0 7	0 7*	0 8	0 9
Coronation Syndicates	7 4*	7 3*	7 7	7 6
Crown Mines	54 6	54 6	55 0	55 6
Daggafontein Mines	3 4*	3 5	3 4	3 4*
East Rand Coals	1 4*	1 4*	1 4*	1 4*
East Rand Deeps	1 0†	1 0†	0 8*	0 8
East Rand Minings	9 6*	—	9 6*	
East Rand Proprietary	7 6*	7 0	7 3	7 9*
Eastern Golds	0 6*	0 6*	0 6*	0 6*
Ferreira Deeps	7 3*	7 6†		
Frank Smith Diamonds	4 1	4 1	4 0*	4 1
Geduld Proprietary	61 3	62 6*	62 9	63 6
Glynn's Lydenburgs	13 6*	14 0	14 6*	14 3
Government Areas	105 0	105 6*	105 6*	105 6*
Hume Pipes	8 0*	7 9*	7 6*	8 0*
Knight Centrals	5 0*	5 0*	5 2*	5 3
Lace Proprietary	9 0*	9 0*	9 0*	9 0*
Langlaagte Estates	19 6	19 6*	19 3*	19 6*
Leeuwpoort Tins	4 0	4 0	4 0	4 0
Lydenburg Farms				[illegible] 3
Meyer and Charltons		69 6*		
Middelvlei Estates		2 0†	2 0†	
Modder B.'s	25 0	25 0	24 9*	25 3
Modder Deeps	15 6	15 3*	13 9	14 0
Modder Easts	7 6	7 9*	8 0	7 9*
Natal Navigation Collieries	—	—	27 0	—
National Bank	£8 18 9		—	£8 [illegible]
New Eland Diamonds	11 6*	11 6*	10 6†	12 6*
New Era Consolidateds	6 9*	6 9*	7 0	7 1½
New Geduld Deeps	1 9*	—	2 0	2 0
New Kleinfonteins	5 6*	5 6*	5 6	5 6*
New Modderfonteins	78 7½	78 9*	78 9	79 0*
New Primrose	—	—	—	3 6*
New State Areas	39 6*	39 6	39 9	40 0
Nigels	7 6*	8 6*	7 6*	8 6*
Nourse Mines	15 6*	15 9	15 9*	15 9
Pretoria Cements	43 6*	43 0	43 0	42 9*
Rand Collieries	1 6*	1 6*	1 6	—
Rand Nucleus				0 10*
Randfontein Centrals	15 6†	—	—	16 0†
Randfontein Estates	23 3	23 1*	23 1*	23 4½
Rouxville Diamonds	1 1		1 6†	1 5†
Roberts Victors	9 0*	9 6*	10 0†	9 6*
Robinson Deep "A"	32 0	32 0	32 0*	32 0
Robinson Deep "B"	12 0*	12 6†		12 0
Rooibergs	4 6†			
Ryan Nigels	—	3 0*	—	—
Simmer and Jacks	3 5*	3 5	3 4½	3 3
S.A. Breweries	29 6*	30 0	30 0*	—
S.A. Lands	5 7*	5 6	5 6	5 6
S.A. Reserve Bank	£141†	£140†	£136½*	£138½
Springs Mines	48 9*	49 3	49 6*	49 3
Sub-Nigels	9 9*	9 9*	9 10*	9 10
S.A. Alkali	15 9*	16 3†	15 6*	15 9*
S.A. Townships	10 0†	9 6*	9 6*	9 10½
Transvaal Lands		17 0†		—
Transvaal G.M. Estates	8 6*	8 6*	8 9*	8 9*
Transvaal Silvers	12 6*	12 6*	12 6*	13 0
Tudors	0 3*	0 3*		0 3*
Union 5 per cent.	£133¼	£104	£103¼	£103¾*
Van Ryn Deeps	69 6	70 6*	70 0	70 3
Village Deeps	13 6*	13 9*	14 0*	13 6
West Springs	18 11½	19 10½	19 7½	19 8
West Rand Consolidated	7 0†	5 6*	—	
Western Rand Estates	3 9	4 0†	4 0†	3 6*
Witbank Collieries	30 6*	30 9*	30 6*	30 0*
Witwatersrands	15 9*	15 9*	15 9	—
Witwatersrand Deeps	15 9	15 9	16 0	16 1½
Zaaiplaats Tins	4 0*	4 3*	4 1	4 1*

* Buyers. † Sellers.

In the report of the meeting of shareholders in the Orange River Oil Syndicate it was stated that the 137 acres proved would yield eight million gallons of oil and 26 million gallons of ammonia. The figures should have been 8,250,000 and £8,750,000 respectively.

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TOPICS OF THE WEEK.

Rhodesian Mining.

Last week the Rhodesian Chamber of Mines held its annual meeting, when the progress of the industry was very thoroughly reviewed by the Acting President, Mr J. G. McDonald. Dealing with the mining outlook, Mr. McDonald said it presented certain satisfactory features, which he proceeded to indicate. "As gold," he said, "is still by far the principal metal produced in the country, it is interesting to note the increased number of fine ounces won as compared with each of the previous four years, a fact which, taken in conjunction with the additional number of claims current, points to increased activity in gold mining, which it is hoped may lead to the discovery and opening up of new mines. The persistence of values in depth on several of the leading mines is also a very encouraging feature, and it is evident that Southern Rhodesia contains several ore bodies which continue to very considerable depths without any appreciable falling-off in their gold contents. It is necessary, however, to bear in mind certain adverse factors, one of the most important being the rapidly disappearing gold premium, while another is the increasing depth of many of our mine workings. These disadvantages are only partly set off by a certain reduction in working costs which has recently taken place, chiefly due to lower prices in most of the important stores, not to the extent however, indicated by the Secretary for Mines in his report to 31st August last which has recently been issued. There has also, I am glad to say, been a general increase in efficiency on the part of the mine workers which has helped matters somewhat. Working costs: The reduction of working costs is unquestionably the most serious problem which the mining industry has to solve to-day, and it is one that is receiving the fullest attention of the Chamber. The development and opening up of new properties depend very largely on low costs of working, and we are making constant efforts in searching every avenue where any real saving can be effected." Mr. McDonald went on to emphasise what the mining industry means to the country. He declared: "The value of the total mineral production of Southern Rhodesia last year was £4,474,583. Of that amount it may surprise some of those present to know that we estimate that well over three millions sterling was spent in this territory. I feel I am justified, therefore, in saying that the mining industry is carrying the country, and it is surely to the interests of every one of us to do all we can to encourage, help and protect this industry, without which the country could not otherwise at present survive, nor attain that degree of prosperity to which it is entitled to look forward. I reminded the Government and the railways last year that it was on the mining industry that they lived, and that a reduction in taxation and rates would be in their own interest, and I would again urge both these concerns, as well as the Chartered Company, to restrain their over-milking this hardly-fat cow or they will utterly destroy its usefulness." This, need we say, puts the whole matter in a nutshell, and we trust Mr. McDonald's eloquence will not be wasted.

Development of the South-West Protectorate.

Mr. G. R. Hofmeyr, the Administrator of the South West Protectorate, in an interview with the "Cape Times," relates an interesting story of progress and development in that territory. Read in conjunction with the article by our Special Commissioner in this issue, it shows the present position there very clearly.

Upon being interrogated as to the commercial activities of the Protectorate, Mr. Hofmeyr said: "Immediately on assuming my office I realised from a cursory study of geography that it would be impossible to develop South-West Africa with only Union markets available, or by securing the benefits of the European markets through the ports of of the Union. It must be remembered," he proceeded, "that South-West Africa is essentially a pastoral and mineral country, but the etxent of the possibilities of the latter remains to be proved.

"I felt," said Mr. Hofmeyr later on in the interview, "that the construction of a cold storage was essential, with any such dimensions as the industry of the country warranted, with room for the necessary extensions. I was determined, if the farmers failed in undertaking to organise themselves, to press for the constructoin of these works, if at all possible, through private enterprise, but, if that failed eventually by the Administration itself.

"In regard to the erection of such cold storage works," asked the interviewer, "what about the corresponding query of proper harbour facilities to enable the export trade to be conducted?"

"It was immediately realised," replied the Administrator, "that the erection of cold storage works without the harbour facilities which you inquired about would not be practicable. I immediately pressed the Union authorities for their serious consideration of the development of a proper harbour for S.W. Africa. Walvis Bay was eventually selected as the most appropriate place for [illegible] one of the finest natural harbours, not only in South Africa are probably in most parts of the world. I was gratified to find that the Union Government was fully sympathetic to the importance of the project and was earnestly prepared to develop the territory to the fullest possible extent, having regard, of course, to the financial position. The result was that after somewhat prolonged negotiations a scheme of further development was adopted, the necessary funds were made available through the Union Parliament on the understanding that my Administration would stand in for the interest on the money involved. As soon as that arrangement was achieved I naturally turned my attention to the construction of the cold storage works, and tenders were called for and published throughout the world. The result which was the conclusion of a contract with the Imperial Cold Storage Co., is already known, and the financial experts with whom I have been able to consult describe the situation as being entirely satisfactory to the interests of the Territory."

"Is there any truth in the allegations that the financial depression is due to the change of Administration?" Mr. Hofmeyr was asked finally.

"Those who are familiar with the situation are aware that the depression is due to a variety of causes," he replied. "First of all, there is the inevitable aftermath of the world war; the outflow of capital from Germany to the Territory was reversed; there was a good deal of speculation in paper credits, rendering impotent capital which should have remained and circulated in the country. There was the closing down of the diamond mines, the unlimited credit system, which in a country with temporary artificial prosperity has nearly always failed; there was no regular market for the stock, and, to crown it all, there was a continuous drought. Notwithstanding these drawbacks, I think it can be claimed that so far from the Territory having suffered from change in administration, the fact that the Government has been entrusted with the charge of the mandate for the country has been a God-send to the inhabitants.

"In the first place, despite the increasing loss of revenue, the high German railway tariffs which prevailed were materially reduced, and no increased taxation was placed on the people, while at the same time ample provision was made for Land Bank purposes and in other directions. Moreover, since our occupation in 1915, there has come into circulation, through administrative expenditure, Union Banks, the Land Bank and the Union market, investment of private capital between 14 and 15 millions, and one may well wonder," remarked his Honour, "what has become of that portion of money which was circulated and retained for purchasing elsewhere the usual requirements."

Notes & News.

Institution of Mining and Metallurgy.

The following awards have been made by the council: (a) The gold medal of the Institution has been awarded to Mr. Edgar Taylor, M.I.M.M. (President, 1910-1911 and 1916-1918, honorary treasurer since 1913), in recognition of his services to the Institution since its foundation in 1892, and as an evidence of appreciation of his honourable record of work in connection with the development of the mining industry, particularly in India. (b) "Consolidated Gold Fields of South Africa, Ltd." gold medal has been awarded to Dr. Leonard Hill, F.R.S., in recognition of his valuable researches on ventilation, and for his paper on "Ventilation and Human Efficiency," contributed to the transactions. (c) "Consolidated Gold Fields of South Africa, Ltd." premium of 40 guineas has been awarded to Mr. Henry Francis Collins, A.R.S.M., M.I.M.M., for his paper on "Igneous Rocks of the Province of Huelva and the Genesis of the Pyritic Ore Bodies," contributed to the transactions, and in recognition of his researches on the subject.

The Brakpan Proposals.

The promised Brakpan circular was issued this week. From it we learn that the substance of the proposals is to increase the capital of the company by £170,000 through the creation and issue of 170,000 new shares of £1 each. The capital will then stand at £1,020,000. If this recommendation is agreed to, it is provided that these shares will be offered to shareholders at the price of 30s. per share, *pro rata* to their registered holdings as at the 31st May, 1923, and will rank for all future dividends. The underlying reasons for the proposed increase of capital are as follow: Firstly, owing to the funds originally subscribed for the development and equipment of the mine proving inadequate, it has been necessary to provide out of profits no less a sum than £793,118 for these purposes, and in addition it is estimated that a further £100,000 will be required this year to complete the programme. Unless this amount is otherwise provided, further appropriations out of profits will be required. The directors feel that in the past shareholders have had to make considerable sacrifices, and in order that the full results of this year's operations may be available for distribution, approximtaely £100,000 out of the moneys received from the issue of the new shares will be utilised for the above-mentioned capital expenditure. Secondly, it will be recalled that when the Government lease was acquired it was agreed that Brakpan Mines, Limited, should pay a royalty on the Schapenrust claims calculated on a sliding scale. The outlook at the mine being such that gradually increasing profits may be anticipated, it is realised that this charge might develop into an ever-increasing one on the company's earnings. When, therefore, an opportunity presented itself of securing these claims for the company on terms which are considered most favourable, the directors felt that it was in the best interests of the company to effect the purchase, the amount involved being £150,000; and it is proposed to devote for that purpose

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such a sum out of the new capital to be raised. Finally, the conditions at the mine and its prospects, especially in view of recent developments, are such as to reassure the directors as to future profits, and it is therefore considered that the present moment is a favourable one to provide for the balance of capital expenditure, to extinguish the annual charge on profits in connection with Schapenrust, and, by the issue of new shares at a low price, to enable shareholders to obtain some consideration for the amounts appropriated out of profits for capital purposes in past years.

* * *

Kleinfontein Victims' Funeral.

The funeral of Messrs. Gray and Pearse, victims of the Kleinfontein disaster, took place on Wednesday at the Benoni cemetery, which is about three miles outside the town. Amongst the mourners were Sir William Dalrymple (Director of the Kleinfontein Mine), Mr. J. P. Harding (Manager), and Mr. W. Tarran (Underground Manager). There was a large crowd of relatives and friends, and the wreaths were numerous and beautiful. The Rev. F. W. Stakes conducted the burial service of Mr. W. P. Gray, and the Rev. F. Paget that of Mr Pearse, whose coffins were covered by the Union Jack.

* * *

Bwana M'Kubwa Copper.

Encouraged, no doubt, by the current pronounced revival in the prices of leading base metals, the directors of the Bwana M'Kubwa Copper Mining Co., Ltd., are bringing forward a definite scheme for equipping the large property in Northern Rhodesia with a view to as early a start of production as possible. The shareholders are asked to increase the capital of the company from £400,000 to £900,000 in 5s. shares. Of the new 2,000,000 shares, 100,000 are to be styled "A" shares and will carry ten votes each, but in all other respects they are to rank the same as the existing and the new ordinary shares. It is stated that over 7,000,000 tons of ore have been proved, estimated to contain about 3·6 per cent. of copper. A preliminary pilot plant is being erected on the property to treat ten tons of ore daily by the already tested Perkins' process. On the experience obtained with this, orders will be based for the first commercial-sized unit to treat 250 tons per day, being part of a contemplated complete 1,000 tons daily plant. Transport arrangements have already been made with the Rhodesian Railways. Negotiations are pending with the Chartered Co. for the acquisition of additional land and mineral rights, and with Minerals Separations Ltd., for the subscription of fresh capital.

* * *

Congo Radium.

The Brussels correspondent of the *Financial Times* has an interesting account of Congo radium in a recent dispatch. *Inter alia*, he says: "The attention of the scientific world is turned to-day to the Belgian Congo, on account of the vast store of radium discovered there. Uranium ore was first located in the Katanga province of the Congo, where the radio-active ores are quite different from the deposits found in other parts of the world. For instance, the Colorado product is derived from carnotite (uranate of vanadium) and that of Portugal autonite (uranate of phosphorus and calcium). The Katanga ores, on the other hand, are derivatives of pitchblende, the chief varieties of which are distinguished by their black, green, yellow and orange colouring. The proportions and tenors in oxide of uranium, as found in the Congo deposits are very variable. Comparison with the uranium ore worked in the United States, for example, show clearly that the Katanga ores are exceptionally rich. The ores are being worked by the Société Générale Metallurgique de Hoboken (Antwerp). The Union Miniere—the company which holds the mining concession in the Congo—holds large interests in the Hoboken Company, which possesses special plant and expert labour to deal with these important operations. American experts who have inspected the Oolen factory of the Hoboken Company say that it carries the best equipped radium plant in the world. The record annual output was reached in 1922, with 32 grammes—which is more than the world is calling for at present. Existing legislation empowers the Belgian Government to require every producer of radium to place the exploitation of the mines and the sale of the products in the hands of a single organisation. The official view is that this course eliminates risk of stoppage of production through ruinous competition. Proprietary rights in all mineral deposits are held by the Government through the intermediary of the organism known as the Katanga Special Committee, this circumstance constituting a safeguard against excessive depreciation in prices. Further the Government makes a levy on a proportion of the profits of mining enterprises. In the case of radio-active ores the quota of profits due to Government has not been yet definitely settled, but there is every likelihood that it will not exceed 50 per cent. While thus avoiding the trouble due to competition among prospectors, the Congo authorities are at the same time safeguarding the interests of science and of suffering humanity. The recent reduction in the price of radium by the Union Miniere had to be sanctioned by Government before it was allowed to operate."

WITWATERSRAND DEEP.

The estimate of results for the month of March, 1923, is as follow:—Tons milled, 46,900; gold recovered, 13610·425 ozs.; average of stamps running, 180; stamps running time, 28·314 days; tube mills, 5. The working expenditure, including Head Office charges for the month is £45,120, or 19s. 3d. per ton. The estimated working revenue, based on an estimate of £4 7s. 6d. per fine oz. (less 2s. 6d. realisation charges), is £57,841, or 24s. 8d. per ton. The net estimated working profit is £12,721 or 5s. 5d. per ton, from which is to be deducted the capital expenditure for the month of £971, leaving a surplus of £11,753.

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ENGINEERING SECTION.

Electrification of Chilian State Railways—II.

AN ACCOUNT OF A PROJECT WHERE CONDITIONS ARE PARALLEL WITH THOSE OF SOUTH AFRICA.

Regenerative braking is so arranged that regeneration is available on all the speed combinations and at speeds of 12 to 70 miles per hour. The motors are of the field-control type with fields excited by a low-voltage generator driven by a 3,000-volt motor. This motor generator also supplies current for the ventilating blower, the air compressor motors and the lighting and control circuits. The Westinghouse air brake equipment will be similar to that on the present steam locomotives, using straight air when handling the engine alone and the automatic action for locomotive and train.

With the fastest steam trains the run between Valparaiso and Santiago is made in 3 hours 40 mins., but it is estimated to reduce this by 25 mins. or to 3 hours 15 mins. with the electric locomotives. These engines are also expected to maintain a speed of 33½ miles per hour on the Tabon incline.

Local trains working between Valparaiso and Llai-Llai often have ten carriages, but the gradients are such that a single engine can work the entire run. The eleven electric locomotives for working these trains are designed to take twelve carriages. Each engine has two groups of four driving wheels, with the bogie cross frames connected by a hinge as in steam locomotives of the Mallet type. These engines have a nominal rating of 1,500 horse-power, corresponding to a tractive effort of 15,000 lb. at a speed of 37 miles per hour. Their maximum speed is 56 miles per hour. The continuous rating is 1,240 horse-power, and the maximum tractive effort under starting conditions will be 40,000 lb.

The motors and motor equipment are identical with those of the express engines, but only two-speed combinations are provided. At full speed two motors are connected in series and the two groups are connected across the line. At half speed all motors are in series across the line. Four operating speeds are available, and the control is arranged to include a large number of notches in order to provide smooth and rapid acceleration after the several steps. No provision is made for regenerative braking, as the gradients on the sections of the line worked by these engines are not heavy enough to justify this refinement.

On these local runs and on the Los Andes branch the engines will be required to take trains of 250 to 350 tons load. Faster service is desirable, but cannot be obtained with the steam locomotives. In fact, double-heading or banking is required on the heavier gradients in order to maintain the present time-tables. But with the electric locomotives it is planned to shorten the time and thus improve the service.

Goods and Shunting Engines.—In goods service the south-bound traffic is slightly the heavier, averaging in normal times 3,600 tons daily from Valparaiso and 3,900 tons through the junction at Las Vegas. The south-bound goods trains have from twenty to thirty wagons, or 550 tons behind the tender, are worked by 4-8-2 steam locomotives assisted by banking engines of the 2-8-0 type between El Salto and Pena Blanca and on the Tabon incline. North-bound trains take a banking engine for the six miles from Til Til to Rungue. On these two banks the speed is only 10 to 14 miles per hour.

With the electric locomotives the load will be increased 40 per cent.—to 770 tons—and the same amount of traffic will be handled with a reduction of 25 per cent. in the number of trains. One engine will handle this 770 ton load over the entire line, except for the ascent of the 12-mile Tabon incline of 1 in 44, where a banking engine will be employed. The speeds will be about 35 miles per hour on approximately level line, and 24 miles per hour on the incline. With the higher running speed and the elimination of stops for taking coal and water it is expected to make the run in four or five hours less than with the steam locomotives handling 550-ton trains.

Each goods goods engine will have two driving bogies with three axles each, the bogies being connected by a hinge, and all buffing stresses being transmitted through the underframing. The nominal rating is 1,680 horse-power, or a tractive effort of 27,950 lb. at 22.6 miles per hour, with a continuous capacity of 20,880 lb. at a speed of 25 miles per hour. Their maximum speed capacity is 40 miles per hour. For each axle there is a 280 horse-power 1,500-volt motor, the motors being insulated to operate two in series for a line voltage of 3,000 volts. These motors have forced ventilation to ensure high continuous capacity. They drive the axles through flexible gears as in the passenger locomotives, the gear ratio in this case being 3.94 to 1. The speed combinations are the same for driving and for regenerative braking, the motor fields being separately excited in the latter case by a 3,000-volt motor generator set. This set also provides low-voltage power for the air compressors, ventilating blowers, control equipment and lighting.

Cast steel frames of the bar type are used for the bogies and are placed outside of the wheels. Semi-elliptic plate springs are placed over the driving boxes and are connected by equaliser beams carried in the frames. The outer spring hangers are attached to coil springs seated in the frames. The Westinghouse air brake is used, in accordance with the standard practice of the State Railways. It is so interlocked with the regenerative braking system, that the latter may be supplemented by applying the air brake throughout the train without applying it to the engine driving wheels. Automatic couplings of the American type are provided, but as they are not yet in general use in Chile the European type of chain coupling is also provided.

The cab, 38 ft. long, has a driver's compartment at each end, a central compartment for the electrical and other equipment. At one bogie the centre pin is restrained both laterally and longitudinally, but that of the other is restrained only laterally, an arrangement which permits free longitudinal movement of the cab in relation to one of the bogies. Pantagraph current collectors are raised by springs and lowered by compressed air cylinders, all movements being controlled by compressed air. They are automatically locked when in the lowered position. Individual switches arranged in banks establish the main circuit connections and are operated by compressed air under the control of electro-magnetic valves. In each driver's compartment is a master controller to provide for double-end operation, this controller serving both for driving and for regenerative braking.

Goods yard and shunting service will be performed by engines of the double bogie type with four motors of 120 horse-power driving the axles through solid helical gears. They have a nominal rating of 560 horse-power, corresponding to a tractive effort of 19,500 lb. at 11 miles per hour. The continuous capacity is 1,500 lb. at 12.5 miles per hour, and the maximum tractive effort under starting conditions is 34,000 lb. Their maximum speed is 35 miles per hour. These engines are designed to handle train loads of 1,200 tons in the yards.

The bogies have outside frames resting on the boxes and carrying the transverse bolsters with the centre pins. The four motors are of the series type with two-speed control. For full speed two groups of two motors each will be connected across the lines, and for half speed all the motors will be connected in series. In general, the motor, brake, coupling, and electrical equipments are similar to those of the goods locomotives.

Hyro-Electric Stations.

The railway administration will not establish its own generating stations, but will purchase power from private plants. One of these stations is now being built about 37 miles from Santiago by the Chilian Electric Tramway and Light Company. This is known as the Maitenes station, and takes water from the Rio Colorado by a 5-mile canal which includes tunnels. From the forebay at the end of the canal there will be steel penstocks laid down the mountain-side to the station, giving a head of 580 ft. The station equipment will consist of three Westinghouse 8,125 kVA generators, and its ultimate capacity will be 30,000 kilowatts.

From the power station a twin circuit transmission line of 110,000 volts, carried on steel towers, will extend to a receiving station at Santiago. This station is also connected with the present supply of that city, which includes the Florida hydro-electric plant of 15,000 kilowatts, and the Mapocho steam plant, with an ultimate capacity of 20,000 kilowatts. The 110,000-volt transmission line will be extended to Valparaiso, but for reasons of economy the end sub-stations of the electrified line will be fed from 12,000-volt transmission lines extending from step-down transformer stations near Santiago and Valparaiso. A transformer station near Til Til will step the 110,000-volt current down to 44,000 volts, and a 44,000-volt transmission line will extend thence to Limache to feed the railway sub-stations and to supply power to local industries.

Sub-stations.—Five sub-stations will be provided—at Vina del Mar, San Pedro, Llai Llai, Rungue and Quilicura. Each will be equipped with two 2,000-kilowatt motor generator sets, and will have space for a third set. Each set consists of a 2,800 horse-power 50-cycle three-phase 2,300-volt motor driving two 1,000-kilowatt 1,500-volt generators connected in series. Two direct-current exciters will be provided for exciting the motor and generator fields respectively. These sets can carry a 20 per cent. overload for five minutes without injury, but as an additional safeguard they will be fitted with the Westinghouse flash suppressor. Forced ventilation for the generators will be supplied by blowers under control of thermostats.

At the two end sub-stations the transformers will have a voltage ratio of 12,000 : 2,300. The one near Valparaiso will receive 12,000-volt three-phase 50-cycle current from the generating company's step-down station. The sub-station near Santiago will receive a similar supply from the other step-down station of the company. The three intermediate sub-stations will receive power at 44,000 volts, and the transformer ratio will be 44,000 : 2,300. All transformers will be of the oil-insulated self-cooled type. Yard feeder switches will be provided at each sub-station to connect up the two sections of line and thus cut out the sub-station in case of trouble without [illegible].

At the present moment work is proceeding fast on the building of the sub-stations, that at Vina del Mar being 50%, San Pedro 10%, Llai Llai 60%, Rungue 50% and Quilicura 85%, complete. The equipment is already in the country; that for Quilicura and Rungue left the United States on June 3rd in the "Craster Hall" and has been here some time, that for the remaining sub-stations has just arrived in the "Charlton Hall" and the greater part of it is now piled up on the malecon.

Overhead Equipment.

The overhead wire or trolley wire system of operation has been adopted, with 3,000-volt direct current on the trolley wire. This equipment will be of the simple catenary type with a ⅝ in. steel cable carrying flexible hangers from which the 4/0 trolley wire is suspended. Posts spaced at intervals of 197 ft. will carry the wire at the unusual height of 19½ ft. above the rails. At tunnels, however, this headroom will be reduced. At the present moment 25% of the poles have been erected at the Santaigo end of the line.

Bracket arms will carry the cable on tangents and easy curves. Cross span-wire construction will be used on sharp curves, in yards, and where there are more than two lines of rails. The feeders and power-indicating and limiting wires will be carried on wooden cross arms, while the ground return wire will be carried near the top of the post. Rail joints will be bonded together with welded bonds, but in the goods yards only one rail of each line will be bonded.

Two 500,000 c.mil. feeders will extend from Valparaiso to sub-station No. 2 at San Pedro, whence one feeder of the same capacity will extend to Ocoa. Beyond this there will be two 250,000 c.mil. feeders to sub-station No. 3 at Llai-Llai, and one 50,000 c.mil. feeder to Yungai, near Santiago. From this point to the Mapocho generating station there will be two 250,000 c.mil. feeders. On the Los Andes line a single 700,000 c.mil. feeder will be provided.

As a protection against high potential, due to broken bond at rail joints, etc., a 4/0 ground return wire will be run parallel to the single-line stretch of the railway and will be connected to the rails at intervals of about one mile.

It has been necessary to remove further away from the permanent way 146 miles of telegraph lines—these being the lines of four different companies following the railway for various stretches—and 33 per cent. of this work has now been accomplished.

The locomotives, etc., are now being manufactured in the United States and will be shipped in due course in the "Craster Hall," "Charlton Hall," and other vessels of this line, which has the contract for shipping the material.

By the original contract the line was to be ready for electric working by the 27th of September of next year, but at the time of writing it seems doubtful if it will be so.—*The South Pacific Mail.*

Motor Cars.

The display of these was really magnificent and surpassed all previous exhibitions. This section was, as usual, the most popular one of the Show.

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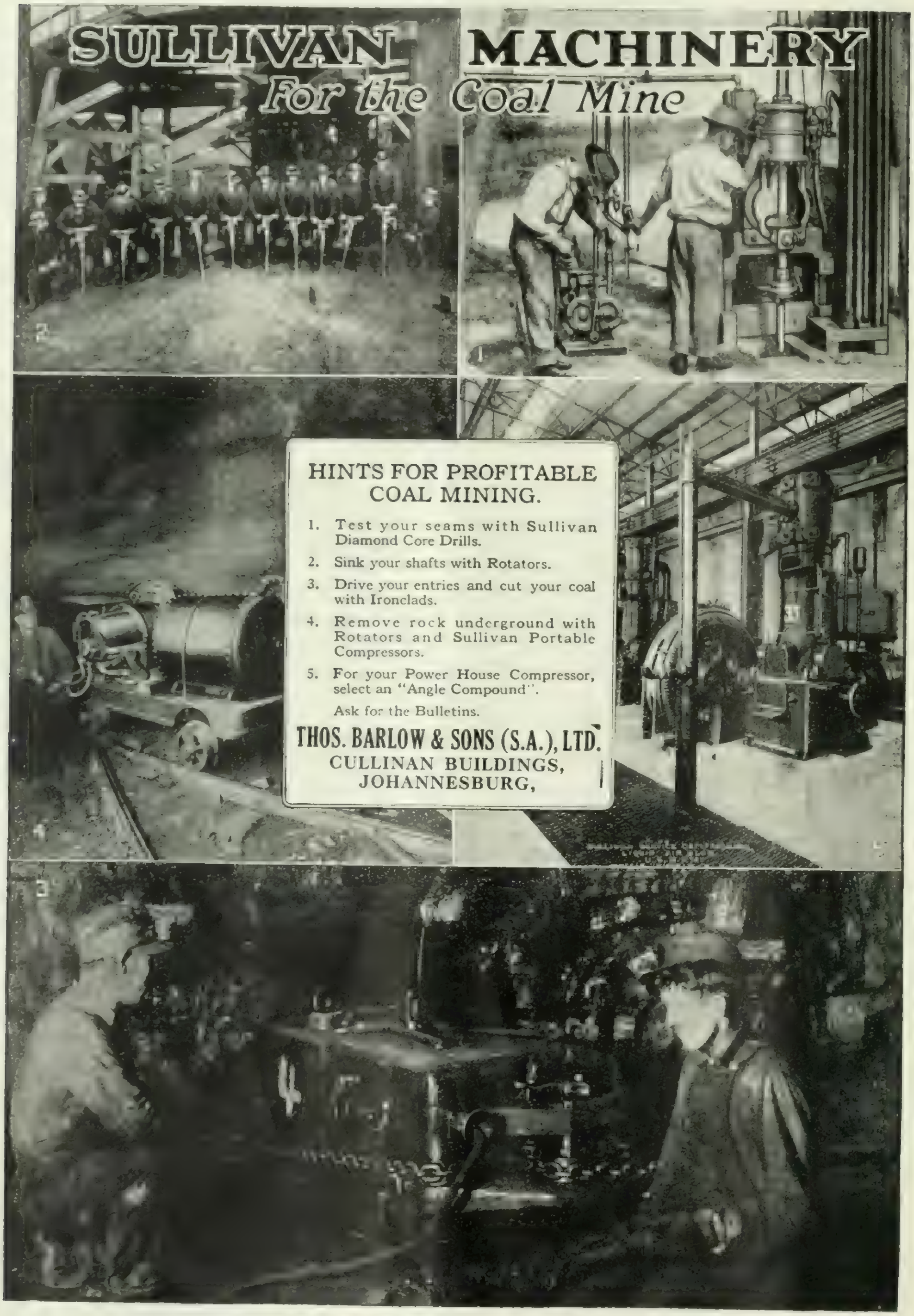

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Mining Drill Steels.

SOME NOTES ON THEIR SELECTION AND TREATMENT.

Of late years there have been observable in the mining world indications that drill steels are beginning to receive more careful attention than has at any previous time been paid to them. It is now fairly well recognised that great economies can be effected in these steels by, on the one hand, careful selection; on the other, correct heat treatment. It is a debatable point whether this increased attention is due to the need for economy in all directions forced upon mine owners by the present circumstances, or to the growing spread of enlightenment concerning steels and the possibilities of heat-treatment. Probably both have had something to do with it. Be that as it may, the steel manufacturer cannot but feel thankful for this change in policy. One thing is certain. The more careful the selection, the more correct the heat-treatment, the more efficient the putting into use of drill steels, the better satisfied will be the good steel-maker. He welcomes careful selection, correct heat-treatment and efficient use. It is the bad steel-maker alone who profits by carelessness. The closer the attention paid to drill steels, the more will buyers realise that the good steel is the cheapest in the long run.

The Best Analysis for a Good Drill Steel.

The analysis of a good and thoroughly reliable hand drill steel ⅞ inch oct. and larger, such as the Edgar Allen "Stag" Yellow Label, is as follows: Carbon, 0·70 per cent.; silicon, 0·10 per cent.; manganese, 0·30 per cent.; sulphur, 0·02 per cent.; phosphorus, 0·02 per cent.

Low manganese and a minimum of sulphur and phosphorus are necessary.

Silicon content is less important, and if it does not exceed 0·1-0·2 per cent. no trouble need be feared.

Analysis Alone Not a Sure Guide.

It must be borne in mind, however, that in drill steels analysis can be misleading. It is quite possible to get two steels with exactly similar analyses giving totally different results when put into use. The buyer is often misled in this way when comparing quotations. A difference in price between two steels of exactly similar analysis has, on the face of it, no justification. He reasons that having the same analysis they must be the same steels. In reality, as tests will show, they may not be the same at all. The method of manufacture, the time spent in manufacture, the purity and source of supply of raw materials, all have some influence on that mysterious property called "body." Consideration should also be given to the precautions that are taken to ensure that sound steel only is sent out. These are factors apart from the analysis which have a reaction on the price, and they should be borne in mind.

Heat-Treatment is Important.

One of the great obstacles to the correct treatment of drill steels has been, and still is, the time-limit with which the blacksmith engaged at the mine has to contend. It often leads to incorrect working. The magnetic appliance now being used in South Africa which automatically ejects the drill from the furnace at the correct temperature may prove to be a great palliative of this evil. At many mines the smith has only native labour to help him, and the appliances for heat-treatment are necessarily of a simple and crude kind. But even with primitive appliances and native labour, much can be done to lengthen the life of the steels by the avoidance of certain quite common errors

Three Golden Rules.

There are three golden rules to be observed when hardening drill steels. The first is, avoid too high temperatures. It is a fallacy to suppose, as some users do, that the higher they heat a drill steel the better it will harden. Harden at the lowest temperature that will give the required results. The second gold rule is, heat slowly and evenly; and the third, regulate the treatment, and the amount of care expended on it, by the carbon content of the steel. The higher this carbon content, the more care is needed. This last refers more particularly to special drill steels for exceptional rock-drilling problems.

Hints on Heat-Treatment.

The recommended detailed treatment is as follows: Forge at a bright red heat (825-875°C.), and do not allow the heat to go higher up the steel than necessary for hand sharpening, the point should be hammered lightly and quickly. Harden at a cherry red heat (780-825°C.), not allowing the heat to travel further back from the cutting point than can be avoided. The point should then be dipped in cold water about ¾ inch, leaving a small portion above it at a dark red heat. Temper, —if required, when colour at extreme point is a dark straw (240°C.) by plunging the drill into water. Where large numbers of drills have to be hardened, suitable arrangements for keeping the water at even temperature must be made.

Causes of Fracture.

There are many instances in the use of drill steels where trouble occurs and is attributed to defective steel, when in reality incorrect use is to blame. For example, it is always a mistake, and a probable cause of fracture, to continue to run a drill after the edges of the bit have become so blunt that the drill does not penetrate efficiently. The blunter the bit, the greater the strain. As soon as the cutting edges have been worn away, the drill should be taken out and resharpened. Otherwise the increasing strain will cause a fracture and thus result in a considerable waste of good and usable steel. This is theory. In practice, of course, it may not be possible to discard a blunt drill as early as desirable. Nevertheless, this source of trouble should be eliminated at the earliest possible moment.

Other factors that often cause breakage when the steel is put into use are rough handling underground and improper operation of the drilling machine. A small crack formed by careless handling quickly develops into a fracture under the stress of impact. These are matters that deserve the careful attention of mining men.

It must be remembered that the task a good drill steel has to perform is not light. It has to be hard enough at the point to cut into hard rock and tough enough in the shank to withstand the driving piston's repeated blows. To enable it to perform this task it should be handled, used, and treated as methodically and carefully as any other tool steel.

If it were possible to normalise the steel by heating to 800°C. and cooling in air after forging, this would help very much to reduce the percentage of breakages, but this operation is seldom carried out, which makes it all the more advisable to forge with care. Drills are often forged at too high a temperature, while the forging is allowed to go on after the temperature has fallen below the critical point, a serious mistake.

Recent Developments.

One of the most interesting discoveries is that the breakage of drill bits can be considerably lessened by giving the bits a day's rest in between the starting of each job. Fatigue in steel is now known to be an important contributory cause of failure, and it is evident that this applies to drill steel also. An experiment carried out in America two years ago showed that whereas a drill used continuously on starting new holes broke like glass after the twelfth hole, a drill made from the same steel and given a day's rest between each hole drilled 107 new holes before breaking. As a result of this test, new methods based on the plan of resting the steel were introduced, and the steel breakages became negligible.

Another suggestion that is being put forward persistently is that instead of the ordinary carbon steels new expensive alloy steels should be used for this purpose. Of course, so far as steel manufacturers are concerned, they would welcome any such change in the quality of steel ordered. The steel that gives the greatest output is the steel they prefer to sell. But unfortunately the [illegible] treatment that it would at present [illegible] account the expense of a good quality alloy steel. Alloy steels require, as a general rule, much more careful heat-treatment than carbon steels, and with the class of labour employed in many mines any such extended carefulness is out of the question.

In the early days of gold mining in South Africa higher qualities of steel were supplied, but with the enlargement of the mines the requisite care in its heat treatment could not be given, and a cheaper and less efficient type, which would, however, do a reasonable amount of work, had to be adopted.

As a matter of fact, however, there are no data as yet to prove that for this purpose alloy steels are better than carbon steels. Experts declare that they are inferior because they tend to segregate and are less uniform in composition, quite apart from the less simple heat treatment.—From "Edgar Allen News."

Why Cast Iron Burns.

A NEW ALLOY FOR FIRE BARS.

(From a Special Correspondent.)

One of the curses with which the engineer has to contend is the burning of cast iron firebars. Thus the ordinary standard hand-fired bar such as is used for "Lancashire" and other similar types of boiler, say a 1in. bar with ½in. air space in two sections, each 3ft. long, has an average life of probably nine to twelve months on natural draught and much less for mechanical draught. It is quite possible, however, for a set of bars to be melted up in a few weeks, and the troubles caused in connection with mechanical stoking have been one of the essential and serious disadvantages of this method of firing during the past century.

A very valuable, not to say expensive, piece of research work on this lengthy and important subject has been completed after three to four years' work by Messrs. The International Combustion Corporation, Ltd., of Derby, as a result of which they have thrown much light on the subject and been able to devise a new "Usco" alloy, essentially a special variety of cast iron, to overcome most of the difficulties.

It appears that whilst the destructive action of the furnace consists of two distinct operations, the melting of the iron and the burning of it (combination with oxygen), in practice most of the trouble, to the extent of about 90 per cent., is caused by burning. A comparatively pure cast iron has a melting point of about 2030° F., but ordinary foundry iron contains amongst the large number of impurities phosphorus and sulphur, which, at the high temperature of the furnace, form phosphides and sulphides of iron. These latter compounds melt at a considerably lower temperature, about 1740° F., so that in practice an ordinary cast iron firebar, as soon as it reaches 1740° F., becomes porous, because the phosphides and sulphides melt and run out, leaving an expanded mass of pure cast iron. Figure (1) is a photograph showing a section of a firebar in the initial stages of burning. It will be seen that the main body of the metal is of the ordinary very close texture, still containing phosphides and sulphides, but the lower portion has begun to be exposed to a temperature of over 1740° F., so that the phosphides and sulphides have run out, leaving a residual mass of cast iron which is much more porous. Figures (2) and (3) are also interesting photographs of a portion of a firebar after polishing and etching.

This porous mass of cast iron then begins to oxidise rapidly at about 1830° F., that is to say, at a lower temperature than ordinary non-porous cast iron. It is interesting to note also that even in this very porous condition the oxidation barely commences until the temperature is about 1470° F., being at this temperature 1-10th as great as at 1830° F.

What happens, therefore, as proved by this research, is that the phosphides and sulphides first melt and separate, leaving a porous mass of cast iron, which then oxidises much quicker than ordinary cast iron, the carbon in the iron being burned first, so that the outer layers of the bar are converted in turn into purer cast iron, steel, pure cast iron, and finally iron oxide. Graphitic carbon and silicon also add to the trouble, and probably other impurities as well, but the main cause is the phosphorus and sulphur.

There has hitherto been no practical method of overcoming these difficulties. Even if the surface of the bars is chilled, the effect is soon lost at the high furnace temperature, a hard cast iron with a high percentage of scrap increases the impurities and tends to cause "cracking," whilst a soft iron means an increase in graphitic carbon. A number of special alloys have been produced in the past, but have always been found to present serious difficulties in the foundry, either in the way of great expense, trouble with pouring and contraction, brittleness, cracking, etc.

The new "Usco" metal evolved as a result of this research work is stated to have overcome all these troubles, and consists of a special form of purified cast iron with a very much higher melting point and tensile strength, having a life of from three to ten times that of ordinary cast iron, whilst also it pours without difficulty and does not crack. The cost is reasonable, being only about 50 per cent. more than ordinary cast iron, and every engineer can therefore easily test the matter for himself, as the price of a set of firebars is not much more than usual, and the possibilities in the way of convenience and economy do not need emphasis.

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TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIETENED BY SHOW AND HOLIDAYS—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—HUME PIPE INDUSTRY—COAL— WIRELESS WORLD CHAIN—WITWATERSRAND AGRICULTURAL SHOW— SOME INTERESTING EXHIBITS.

General.

During the past two weeks the Rand, owing to the Easter holidays, but more especially to the annual Agricultural Show (which has naturally absorbed much attention on the part of business men), has not been working up to full capacity in respect of general mining business. Although the actual orders booked on the Show Ground are admittedly not very big (as a matter of fact, they are not expected to be very large, the whole thing being in the nature of advertisement and propaganda), the net result may, in the opinion of experts, be said to be very encouraging and of a high educational character, leading undoubtedly to good business in the future. In the view of commercial experts, the exhibition, especially of the Union's industrial development, was a very excellent one, and showed without any doubt very material progress in every department throughout the Union. There can be no gainsaying that the Agricultural Show was, as always, a pronounced success, and, although it might be alleged that the majority of visitors were less of the hayseed and more of the picnic characteristics, still there was undoubtedly a big proportion of the backbone or real agricultural interest of the Union, to whom the Show and its attractions must have powerfully appealed in an educational manner. Local merchants are hoping that the magnificent displays of agricultural implements shown on the Show Ground will bear fruit in due time. In the meantime retailers reaped a good harvest, which must have been very welcome to them at the present time.

In conversation with a very prominent commercialist this week we gathered that the second quarter of the half-year—from now on till June—should, in his opinion, see a little revival in business generally, and that it was quite possible that both the gold and diamond industries might see a little betterment. The fact, he said, that our industrialists throughout the Union had combined to make such a success of the Witwatersrand Agricultural Show showed that they had unbounded faith in the future of the country, and the influx of visitors from all parts of the Union to the exhibition spoke volumes, not only to the interest that the people took in the yearly Show, but also to the forward movement of the country. Everybody, he thought, was of opinion that we are making progress from an industrial point of view, and signs were not wanting, he added, that we are going to make even greater progress in the future. The new Budget taxes, although, of course, not welcomed, are still, on the whole, recognised as fair and equitable The only fly in our ointment is the unsettled state of affairs in Europe, which gives us no chance to go ahead in the way which present local conditions fully justify. The keynote struck this week was that we have every reason—apart from the chaotic conditions prevailing in Europe, which, unfortunately, at the moment appear none too good—to be optimistic as to the future of the Union, and that if we are allowed a fair course we are bound to forge ahead. That time may be slow in coming, but even present-day pessimists agree that it cannot be much longer delayed. The big coal strike in Britain, with its potentialities, is, unfortunately, far from reassuring.

It is understood from a private cable received that the first portion of the Mozambique Convention has been signed in Lisbon. This seems to assure the continuance of recruiting of East African natives for the next twelve months, which must be held to be very satisfactory for the gold mining industry

Iron and Steel.

The past week has been interrupted by the holidays and the Agricultural Show, which have dislocated business to a considerable extent. Things at the moment are quiet, with, however, signs of improvement.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s., cheques plates, 27s. 100; lb.; imported flats, ½ x 3-16, ¾ x ⅛, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. lb.; phosphor tin, 2s. 9d. lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 32s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 7s. 6d. to 39s. 9d. each; barbed wire, " Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d.

per coil; fencing standards, 14 in., 19s. 6d. per dozen, 12 in., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 90 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 14's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; [illegible], £25 per ton of 2,000 lbs.

Second-hand Machinery.

There is still a good deal of business being done in second-hand mining material, says a well-known house this week, but stocks, as previously stated, have run so low that it is impossible to supply all those inquired for. The time is coming, he feared, when several dealers will have to close their offices if stocks are not replenished very shortly. The mine engineers and mine managers on the Rand are pushing up requirements for their mines whenever they can buy these spares, and it is found that on the first opportunity occurring of a mine closing down the existing mines will be first in the field. There are still a lot of boilers in the town just now of sorts, and it is regrettable to state that amongst them are larger ones of the multitubular pattern, good enough for the next 25 years' work, now being cut up for plates, as there are no buyers just now for large sized boilers, and dealers do not care to keep them for any length of time, but prefer to make a turnover by selling them as plates. There have been several inquiries from outside municipalities for certain plants, such as crushers, oil engines and an occasional inquiry from some new syndicate starting up the mine. This all tends to good business, and it is hoped that before long the foundry and mining markets will be more steady, and conditions for some of these ventures to go ahead and flourish.

Britain: Mail Advices.

The London Iron and Steel Exchange states that the Home demand for pig iron for near delivery is active, but to a great extent remained unsatisfied, as stocks in most cases had been sold for some time ahead. A large export business is offering, principally from the Continent, but also from the Colonies. Reports from French and Belgian quarters indicate that the steel industry in those countries is in a state of chaos and that many mills are closing down.

Continental Steel Contracts.

British iron and steel manufacturers and merchants alike, says *The Ironmonger* in its last week, are seriously perturbed at the prospect of the cancellation of practically all their contracts with Continental works. Continental makers have intimated that they will be unable to fulfil their contracts. From Holland, where one of the great German steel makers has a selling organisation, a letter has been received declaring that the French occupation of the Ruhr district has produced a case of *force majure*, which absolves the German works from their obligations. One of the large British tube works is reported to be awaiting delivery from the Ruhr of 9,000 tons of strip, and being unable to obtain the material, has been compelled to dismiss a number of workmen. From other parts of the country also reports are coming in of manufacturers being hampered by the non-arrival of material purchased some time ago on the Continent.

Quotations.

Pig Iron.—Cleveland foundry No. 1, 122s. 6d.; No. 3, 117s. 6d.; No. 4 forge, 112s. 6d.; mottled, 107s. 6d.; hematite, mixed numbers, 115s. Finished Iron and Steel: Iron—Crown bars, £11; best bars, £11 10s.; angles, £11 10s.; tees, £12. Steel—Billets, 80 ft., £9 10s.; hard, £10 10s.; bars and angles, £9 10s.; tees, £10 10s.; joists and channels, £9 15s.; plates, ship £10, boiler £14; rails, £9 10s.

United States.

An esteemed firm has allowed us to read the following cable received by them from America, viz.: "Money rates advancing—production very high—buying heavy throughout the country—wages advancing—business excellent—inflation feared"—which speaks for itself.

Timber and Building Materials.

Business in the timber trade, owing to the holidays, has been quiet this week, but a fair volume of business, nevertheless, has been transacted. Prices remain as quoted, but with an upward tendency. Building operations are brisk, and are expected to become livelier very shortly. Carpenters and bricklayers are not too plentiful. There is nothing in especial to report as to big contracts, although some of these are looked for very soon, but smaller fry are plentiful, and contractors are fairly busy. The price of bricks and other building materials remains about the same.

Timber Prices: 3 x 9 deals, 1s. 1d to 1s. 2d.; scantlings, 10½d; beaver boards, 4d.; floorings, 6d. to 6½d.; ceilings, 4d. to 4½d.; Oregon, 5s. 3d. a cube; pitch pine, 6s 6d. to 7s 6d; corrugated iron, 8½d. to 8¾d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d. to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft. 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in.,. 10s. 6d.; dry red oxide, 14s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 51s. for 1 to 3 ply.

The Hume Pipe Co.

The Hume Pipe Company has recently received several large orders; in fact, at the moment business is booming, said the managing director this week. The Johannesburg Municipality placed orders for concrete piping for sewage purposes to the value of £4,150, viz.: 12,000 ft. of 4 in., 24,000 ft. of 6 in., and 12,000 ft. of 8 in. concrete pipes, together with the necessary fittings. Two large siphons have been secured in the Cape district, whilst an order for 100,000 ft. of 4 in. light pressure pipe has also been received. A pipe line of 7,500 length by 12 inches diameter has recently been tested to 75 lb, per square inch, with very satisfactory results. In concrete sundries the company is especially busy. A concrete block silo, 45 ft. high by 15 ft. internal diameter, has just been completed on Sir Abe Bailey's farm at Colesberg, whilst General Smuts has given the company a repeat order for another concrete block silo for his farm at Irene.

Coal.

The Natal coal mines are very busy exporting, although prices for export are low. The better position is primarily due to demands for the Eastern trade. The Transvaal coal trade, on the other hand, despite the Eastern demand, has not improved materially.

Wireless World Chain.

It is announced from London that the first of a series of powerful Marconi transmitting stations, forming a world chain for the purpose of rapid commercial wireless telegraphy, will shortly be erected in England. The erection of six stations will involve an expenditure of from two to three millions sterling. The six stations, which will have a total minimum transmitting capacity of 35,000 to 40,000 words per hour, will be linked up ultimately with ten other stations in different parts of the world (including South Africa), and Marconi's Wireless Telegraph Company, Ltd., are only awaiting the issue of the Government licence to begin their immediate erection. It is hoped that the English station will be able to operate within a year.

British revenue and expenditure for the year ended March 31 show, it is satisfactory to note, a surplus of over £100,000,000.

Who in your plant takes the Initiative on Lubrication?

We occasionally find a plant engineer who uses lubricating oils which he cannot thoroughly endorse. Oils not of his own choice are often supplied to him. They are bought for the plant on a price-per-gallon basis.

Through indifference or lack of initiative he fails to protest.

But the engineer who does protest against using incorrect oils usually finds the engineer at head office in a receptive frame of mind—for the following reason:

More and more chief mechanical and electrical engineers of the country appreciate the operating economies which result from correct lubrication. Thus we often find the head office taking the initiative. They call in the plant engineer and ask:

> "Are we using the correct oil on each piece of machinery in our plant? Are we using it correctly? If not, we may be wasting power and courting trouble. Let us be sure we are right."

Being *sure you are right* calls for a competent survey and study of your operating conditions.

It calls for the counsel of men who know machinery as thoroughly as they know oil—men with highly specialised knowledge of lubrication, and with wide practical experience.

To help you to determine beyond question what oils will subdue friction, lessen repairs, and minimise power waste in your machinery, the Vacuum Oil Company offers to make a Lubrication Audit for you without charge.

Who in your plant should take the initiative and secure this free co-operative service? In writing, kindly address our nearest branch office.

GARGOYLE

Lubricants

"A grade for each type of service"

VACUUM OIL COMPANY
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THE "PROTO"

SELF-CONTAINED OXYGEN BREATHING APPARATUS

for Rescue and Recovery work in Mines after Explosions, etc.

ADOPTED BY ALL THE PRINCIPAL RESCUE STATIONS IN THE UNITED KINGDOM, AND BY MANY COLONIAL AND FOREIGN GOVERNMENTS

SMOKE HELMETS

of various patterns.

For Gob Fires and other Short distance work in Collieries.

Simple. Light. Portable.

THE "NOVITA" OXYGEN RESUSCITATION APPARATUS FOR THE APPARENTLY ASPHYXIATED.

RESPIRATORS FOR ALL PURPOSES. OXYGEN COMPRESSION PUMPS. GAS ANALYSIS APPARATUS. ELECTRIC LAMPS, Etc.

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STANDARD BANK

OF SOUTH AFRICA, LIMITED.

(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862

Authorised Capital	£10,000,000
Subscribed Capital	£8,916,660
Paid-up Capital	£2,229,165
Reserve Fund	£2,893,335

GENERAL BANKING BUSINESS transacted at all Branches and Agencies; DEPOSIT and CURRENT ACCOUNTS opened; PURCHASE and SALE of INVESTMENT SECURITIES effected, etc.

SAVINGS BANK ACCOUNTS opened on terms, particulars of which may be obtained on application.

The BANK is in close touch with TRADE and INDUSTRIAL CONDITIONS, both local and overseas, and special attention is given to COMMERCIAL ENQUIRIES from customers.

EXECUTOR and TRUSTEE business undertaken.

Over 360 Branches and Agencies in Africa.

Agents and Correspondents throughout the world.

Witwatersrand Agricultural Show.

Notes on some of the more important exhibits in the engineering, agricultural, etc., industries.

This year's Show was, as everybody knows, a pronounced success, both in respect of the high quality of the exhibits shown, which far surpassed that of last year, and of the attendance of the public, which beat all previous records. Of the educational value of such an annual industrial Show to the farming community of the Union there can be no doubt, and the popularity of the exhibition with the men and women of Johannesburg was very clearly shown by the crowds which passed through the turnstiles every day the Show was open, but especially on Good Friday, when the population of a fair-sized English town seemed literally to cover every available square inch of the grounds. The point raised by this journal last week, viz., that, notwithstanding the fact that the Show is held annually on the Rand, the centre of the gold mining industry, few, if any, exhibits of the main industry of the country have as yet been shown, has been seriously taken to heart by the mining community, and it is more than probable that this defect will be remedied at next year's Show, as it naturally should be.

The Union Steel Corporation (S.A.), Ltd., whose works are at Vereeniging, had an unique exhibit at the Show, the approach to which was a gateway (later destined for the gateway to the Vereeniging Town Hall) made of steel reinforcing rods, bent and forged in a remarkably graceful design. The gateway is surmounted by a lion, and the splendid decorations consist of sections of the various rails, rods, etc., made at the company's works, whilst the pillars are ornamented with typical specimens of castings and forgings. The whole *ensemble* impressed one with what can to-day be turned out in the way of iron and steel manufacture. The gold medal again awarded the Corporation this year for rolled steel sections, steel ingots, castings and forgings was thoroughly well deserved.

The African Iron and Steel Products, Ltd.

A description of the exhibits of this important local industry at the Show, together with illustrations of the tube mill liners, ends, screens, etc., manufactured by the company will be found in another column. The company, it is pleasing to add, secured a first-class diploma for its various exhibits.

Hume Pipe Co. (S.A.), Ltd.

Owing to restricted space, this company was not able to make its usual large exhibit; the company, however, made the best of the space at its disposal by erecting a Hume Pipe Pergola. The pathway through the pergola was laid with different varieties of tiles manufactured by the company, and concrete pavement slabs in reds, blacks, greys and other colours, were exhibited. These slabs have a granite face with the colours mixed into the material. In addition to concrete verandah columns, the company showed concrete chimney pots, pedestals, vases, flower pots, fire grates, septic tanks, etc. The stand was visited daily by crowds, who evinced the utmost interest in the exhibits.

The Denver Rock Drill and Machinery Co., Ltd., showed "Case" tractors and implements, and in particular an all-steel "Case" threshing machine for threshing all small cereals. This machine has a capacity of 20 to 30 bags of wheat or oats respectively per hour. A feature of this machine is the automatic feeding device, which cuts the bands on the bundles and again automatically distributes the proper amounts of material to the drum, and which is a great labour-saver. In addition to the automatic feeder, there is an automatic wind-stacking device on the machine, which can be so set that it builds stacks up to 30 ft. in height and of any size. The company makes seven sizes of this machine, and thus are enabled to meet all requirements as regards size and price. The firm's exhibits attracted very considerable attention during the Show.

The Clyde Trading Company found themselves almost swamped by the large number of visitors eager to see the working of the famous Chaine Helice liquid elevators and of the new liquid elevator named the "Caruelle," which is on the principle of a Chaine-Helice, but has what is called the "Caruelle" instead of a chain, and is designed so that it can also be worked very simply off windmill gear. Special features of this elevator are: high efficiency, it is non-corrosive, it is quiet in operation, it will raise water from any depth, there is nothing to fix in the well, it has no valves, it is simple and cheap, and it can be fixed by unskilled labour in under an hour. What is truth? asked Pilate. Since then it has been asserted that truth "lies" at the bottom of a well. Well, be that as it may, the writer, after an inspection of the "Caruelle" water elevator at work at the Show last week, came away convinced that the advantages claimed for it are "well"-founded, and that there is a big future for this water elevator in this country and elsewhere. The Clyde Trading Company further showed a fine selection of galvanised wire netting and Johnson's plain fencing and barbed wires, and also Varesco universal droppers, which, all in all, proved a veritable magnet to visitors during the exhibition.

Reunert & Lenz had a very fine display of power machinery. A very striking feature was a full-size replica of a Babcock & Wilcox boiler, and among several novelties were an "Atlas" semi-Diesel crude oil engine, a new Swedish Atlas rock drill, and sets of Belliss & Morcom (Birmingham) single acting sets, together with a magnificent range of pneumatic tools. This fine display deservedly attracted considerable attention on the part of visitors to the Show.

Stewarts and Lloyds (S.A.), Ltd., had a very fine exhibition of hand pumps and power heads (own manufacture), in addition to the prominent makes of engines, hydraulic and turbine machinery of which they are the South African distributors. Among these may be mentioned the Gilbert Gilkes "Turgo" impulse turbine, the "Climax" windmill, the "National" makes of gas engines, petrol and vertical oil engines, a complete range of power pumps for deep-well pumping and of hand pumps. The exhibit included also a hydraulic ram installation which enables water to be pumped to any height up to 500 ft. without any power cost and with very low maintenance charges. The firm was awarded a first-class diploma for hand pumps and power heads.

The National Trading Company held some very interesting demonstrations of welding and cutting with their well-known "Sirius" oxy-acetylene plant. In addition to the many other exhibits was a miner's acetylene lamp, with a specially improved water container. Large numbers of visitors attended the demonstrations and viewed the different exhibits of this firm with the greatest interest.

The well-known engineering firm of Leon Robert showed samples of highly-skilled work in turning and gear-cutting and "local manufacture" work. The principal feature of this firm's display was "La Rapide" jackhammer rock drill, which is the only drill on the market made all in one piece. The firm secured this year, as last, a first-class diploma in the industries section for outstanding engineering work. Their stand this year again received marked attention from visitors.

Box 3807. Tel. 5892.

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

Liquid Oxygen in Mining.*

By Alfred James, M.I.M.M.

I.—AS AN EXPLOSIVE.

It is now over 20 years since the use of liquid oxygen as an explosive was advocated by Linde and others, and the success of this explosive during the driving of the Simplon Tunnel caused much favourable comment. The absence of fumes, and the lessened danger in cases of misfire, combined to enforce its use for this greatest mining work of the day.

But it was not until the Great War that the use of the new explosive became really pronounced. At that time the shortage of glycerine compelled the withdrawal of this chemical from medical and civilian use, and attention was thus attracted to the possibilities of liquid oxygen.

By 1917 its use had become general in Germany; there were at that date no fewer than 72 plants in use at coal mines (installations varying in size from 5 lit. to 110 lit. per hour), 56 plants in use at metal (mainly iron ore) mines (from 7 lit. to 265 lit.), and 32 plants at potash mines (from 5 lit. to 75 lit.). In all, it was calculated by Pabst ("Flüssiger Sauerstoff") that by 1917 the annual consumption of liquid oxygen for explosive purposes was, in Germany alone, no less than 23,000,000 lit. per year.

Pabst claimed that 1½ lit. was as efficient as 1 kg. of dynamite, and this claim is remarkably substantiated by the work in Mexico, referred to below, although in practice the proportion is increased to 2: 1 to allow for evaporation and for the excess of oxygen always desirable in blasting operations.

Pabst also claimed that cartridges cost (pre-Armistice) 1d. each, and that the liquid oxygen itself was produced for 1½d. per lit., including interest on capital and amortisation of plant.

Since the war, with gelatine readily available, and an increased cost of labour for manufacturing cartridges, many users of the old soot cartridges have reverted to the once more easily-obtainable gelignite, but even so, the great de Wendel Mines, in Lorraine, output 12,000 tons a day of iron ore with a production capacity of 220 lit. of liquid oxygen per hour.

It is, however, the remarkable results obtained by Messrs. Calland and Kuryla, at the famous Real del Monte mines, at Pachuca, which once more compel our attention to the efficiency and low cost and cleanness in use of this method of blasting.

It may be assumed that in Northern Europe and in U.S.A., where dynamite works are near at hand, and their products are available at low prices, the proportion is not so advantageous as in countries less favourably situated; and in Germany gelignite has been winning back its former fields, except for installations of magnitude possessing adequate technical resources; but in the mines of Spain, Portugal, Hungary, Serbia, Mexico, Central and South America, Australasia, Africa and Asia, the advantages are even more pronounced than those which still induce the use of liquid oxygen in Silesia and Lorraine, or in the driving of the great new tunnel at Marseilles. In the former territories dynamite is expensive, freight and transport is only possible at heavy rates, and purchase must be in small quantities or special storage must be provided. On the other hand, many mines already possess in their engineering and metallurgical staff men of training in science competent for supervision. At the Real del Monte the manufacture, the transport and the actual blasting are all in the hands of native Mexicans, the only supervision other than the regular executive supervision being that of the consulting metallurgist who, keen on this work, speedily made himself so effective as to enable the termination of the engagement of the engineer who initiated operations on the installation.

Advantages.

The following advantages are claimed to result from the employment of liquid oxygen in place of other explosives.

1. Greater Cheapness.—Claims are frequently made for large economies; I have established a saving of one-third over cheap dynamite (12c. U.S.) or powder at £75 a ton. When, through transport, freight or duty, powder is high-priced, but cheap power is available, the economy effected by liquid oxygen may be very great indeed.

2. Greater Output per Man.—Statistics show an augmented output of over 20 per cent. per man since the adoption of liquid oxygen and [illegible] cartridges at Hayange.

3. Greater Security.—No explosives to be carried or stored. Fewer misfires, lessened danger: the oxygen explosive rapidly becomes inert, and can then be withdrawn.

4. Greater Comfort. The men like it. The atmosphere is free from carbonic oxide and from fumes, and is good to work in. The quick access after a blast, consequent on the absence of fume and noxious gases, helps to increase output per man, as shown above (No. 2).

5. Fewer Accidents.—A return made by the Chamber of Mines, in Lorraine, shows with liquid oxygen only a fraction (one-fifth) of the accidents obtaining per ton when powder is used.

6. No theft.

7. The advantage of an immediate cheap supply of gaseous oxygen for the shops, foundries and rescue apparatus connected with the mine or district.

8. No danger to machinery or industry from cartridges or caps left in the ore or waste.

9. Unaffected by frost.

10. No detonators.

Experience at the Real Del Monte Mines.

The Rozario mine of this large group has been for the last year maintaining an output of 150 tons a day, by the use of liquid oxygen, at an expense only 65 per cent. of the cost of dynamite at 12c. per lb.

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* From Paper read before the [illegible]

(*To be continued.*)

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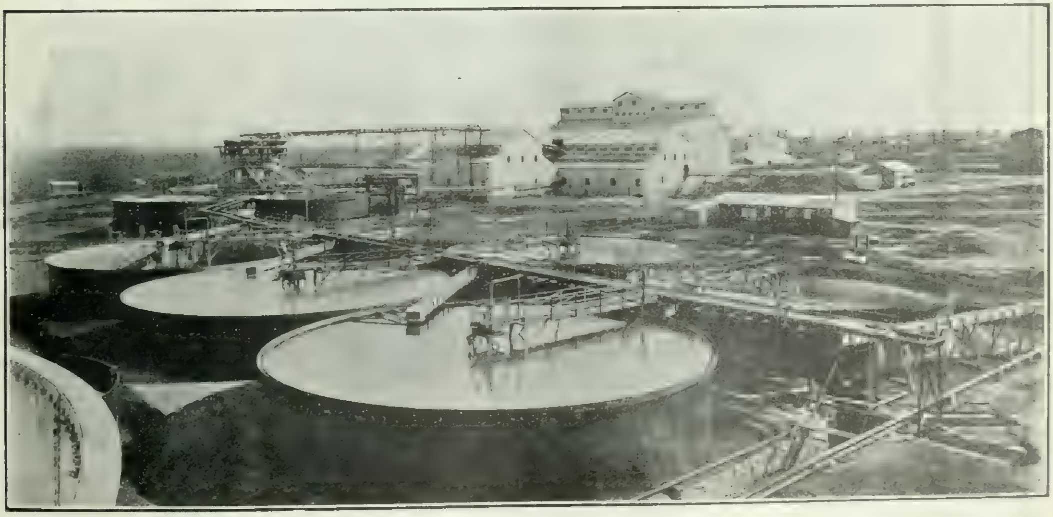
Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 14, 1923 No. 1646

Two Great "J.C.I."—State Mining Enterprises.

VIEW OF NEW STATE AREAS.
The excellent prospects of this mine are described in the Consulting Engineer's annual report, printed in this issue.



VIEW OF GOVERNMENT GOLD MINING AREAS (MODDERFONTEIN).
Prof. Lawn's report on the property, in which he says a prosperous future is assured for it, appears in this issue.

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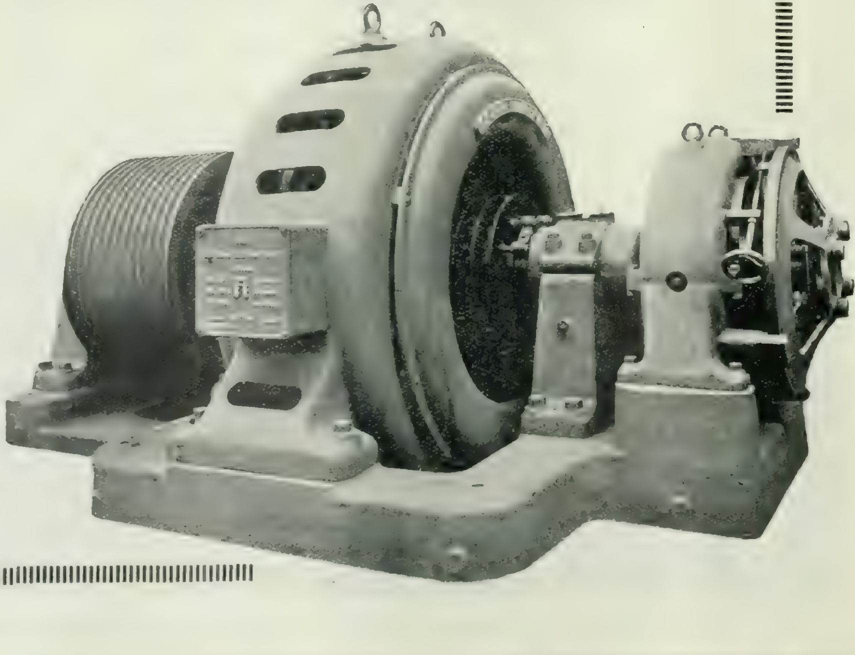


The Greater Durban Roodepoort Deep.

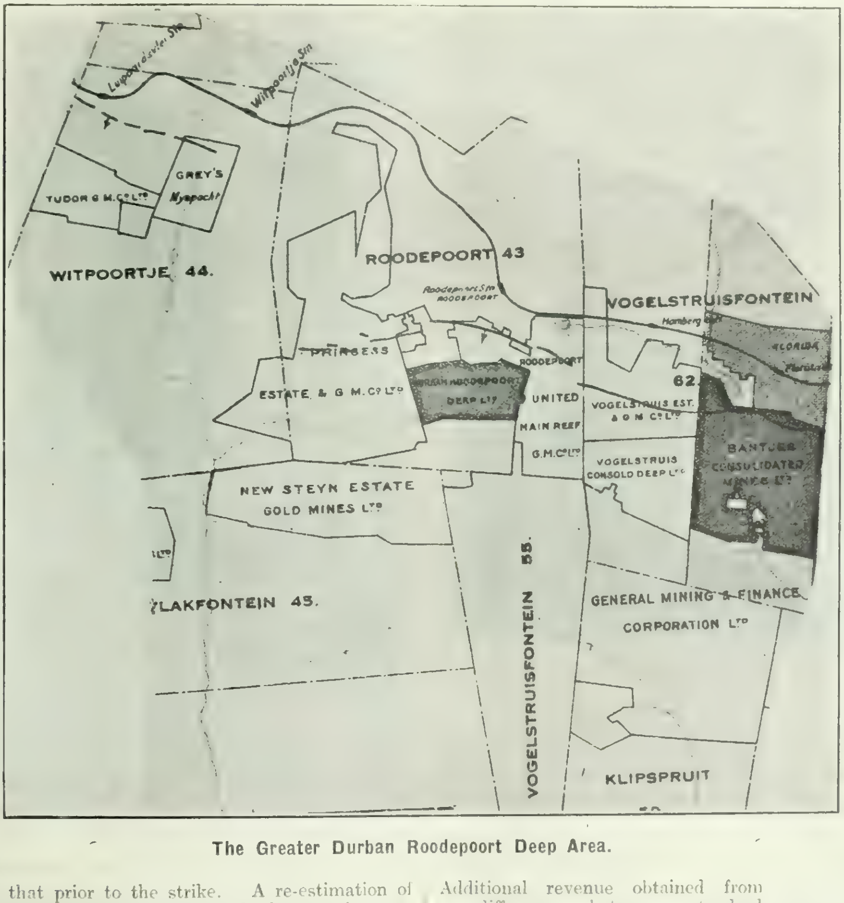
ABSORPTION OF PRINCESS ESTATE CLAIMS—DIRECTORS SERIOUSLY CONSIDERING FUTURE WORKING POLICY—IMPROVED POSITION OF THE MINE.

The Durban Roodepoort Deep promises to prove the saviour of the whole Roodepoort district. From time to time of late we have described the improving prospects of the mine, and official confirmation of those views comes to us this week in the news of the acquisition of 112 Princess Estate claims, which will double the life of the mine. In addition, the annual report of the directors, issued this week, pertinently states: "The results obtained for the second half of the year place the company in an entirely different position from that prior to the strike. A re-estimation of the tonnage and value of the ore reserve discloses an increase in both respects, the reserve at the 31st December being 1,167,600 tons at 6·7 dwt., which compares with 1,092,400 tons at 6·5 dwt., the figures at the end of the previous year. Consequent upon the changed conditions which have come about since the strike, serious consideration is now being given as to the policy to be adopted for the future working of the mine. Alterations are now being made to the reduction plant at small cost to increase its capacity to 35,000 tons per month."

A Year's Results.

The salient features of the results for the years 1921 and 1922 are set out in the following summaries.—

	1921.	1922.
Tons milled	317,900	300,493
Yield per ton milled, dwt.	6·794	6·681
Value of yield based on standard value of gold	£453,486	£421,487
Value of yield per ton milled based on standard value of gold ...	28s. 6d.	28s. 1d.
Additional revenue obtained from difference between standard and price actually obtained ...	£114,171	£30,061
Additional revenue per ton milled ...	7s. 2d.	2s. 0d.
Total revenue	£567,657	£451,548
Total revenue per ton milled	35s. 9d.	30s. 1d.
Working costs per ton milled	33s. 5d.	29s. 5d.
Working profit per ton milled ...	2s. 4d.	0s. 8d.
Total working profit	£36,190	£10,046
Ore Reserve—tons	1,092,400	1,167,600
Ore Reserve—value—dwt. per ton ..	6·5	6·7



The Greater Durban Roodepoort Deep Area.

Mr. H. [illegible], the consulting engineer, in his report for 1922, says: "Comparisons between the two years are not rendered easy by the inclusion in the [illegible] period, January-March, 1922, during which an actual loss of £[illegible] was sustained, instead of a profit. The profit earned for the remainder of the year was a little more than made up for this [illegible] loss. Revenue per ton milled shows a decrease of [illegible], [illegible] of which is due to lower price realised for gold, while working costs show the very material improvement of [illegible] per ton over the year. But a much better idea of the changed conditions existing since the upheaval will be gained from a comparison of the following average monthly results of the last half of each year (July-December). Average footage developed, 1921 [illegible], 1922 [illegible]; average tonnage milled, 1921 [illegible], 1922 32,[illegible]; yield per ton (dwt.), 1921 6·908, 1922 6·7[illegible]; value of yield per ton at standard price of gold, 1921 29s. [illegible], 1922 28s. [illegible]; working costs per ton, 1921 [illegible], 1922 [illegible]; profit per ton at standard price of gold, 1921 (loss) [illegible], 1922 [illegible]. The outstanding features of the increase in monthly tonnage milled and the reduction in costs [illegible] a very material improvement in efficiency, more particularly underground. It is obvious from these figures that the mine is now able to earn profits with gold at standard price and [illegible] gratifying change from the previous year's conditions. Costs are still somewhat above the pre-war figures, but, as you are well aware, some of the important cost factors, such as phthisis contributions and the purchase price of stores, are not within the control of the management. With proper managerial authority restored, it is now possible to derive substantial benefit from the heavy expenditure incurred in putting the old shafts into good working condition and providing suitable equipment for the new sub-inclines. This benefit is reflected in the greater tonnages sent to mill during the last six months of the year; and these larger tonnages demonstrate that, given an adequate supply of native labour, the mine can provide up to [illegible] tons a month. The reduction plant, however, has not been able to handle these tonnages with the best results, and additions and alterations at small capital cost are now in progress to bring the plant up to about 35,000 tons capacity on an efficient recovery basis. The sub-incline shafts have both reached the horizon of the 18th level, and there are plenty of points available for development to enable the maintenance of a higher rate of footage if desired. The West sub-incline has been equipped with a hoist of suitable capacity, but a similar large hoist must be provided for the East sub-incline. The quantity and value of the ore developed, 407,[illegible] tons of 6·8 dwt., are satisfactory features of the year's work. The South Reef has maintained its values and percentage of payability, while the Main Reef shows improvement in both respects. The increase in the tonnage and value of the available ore, from 811,[illegible] tons at [illegible] to [illegible] tons of 6·7 dwt., marks a distinct improvement in the position of the mine, especially from the point of view of supplying tonnage at an increased rate. The shafts have been maintained in good working condition, and no difficulty has been experienced in handling the larger tonnages of recent months, but hoisting and maintenance costs are, of necessity, somewhat high, and will continue so, with a tendency to increase with increasing depth of the workings and increasing age of the old compound shafts. The improved position of the mine reflects much credit on the manager and his staff for the efforts that have been made under difficult conditions during the past few years, and they are deserving of [illegible] appreciation for the loyalty and courage displayed in maintaining the essential services of the mine during the [illegible] period of the strike and revolt in the early part of 1922. Credit is also due to the natives on the mine for their exemplary conduct in these very trying circumstances."

In addition to the 37 Indian locomotives, Sir W. G. Armstrong Whitworth & Co., Ltd., have received through their Lisbon agents, Messrs. Monteiro Gomes Limitada, an order for 12 locomotives of the 4-8-0 superheated type, with double bogie tenders, for the Loanda State Railways of Angola, Portuguese West Africa.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

April 21.—Mozambique Portland Cement Co., Ltd. (a), 12 noon.
April 27.—Robinson Deep (a), 11.30 a.m.
May 4.—Consolidated Langlaagte Mines, Ltd. (s), 11.30 a.m.
Langlaagte Estate and Gold Mining Co., Ltd. (s), 12.15 p.m.
May 8.—Knight Central, Ltd. (a), 2.30 p.m.; (s) immediately after.
May 15.—Modder B (a), 11 a.m.
E.R.P. Mines (a), 12 noon.
May 15.—Modderfontein Deep Levels, Ltd. (a), 11 a.m.;
Geduld Proprietary Mines, Ltd. (a), 12 noon.
May 17.—Rose Deep (a), 10.30 a.m.
Village Deep (a), 11.30 a.m.
Geldenhuis Deep (a), 2.30 p.m.
May 17.—Transvaal Consolidated Land and Exploration Co., Ltd. (a), 12.15 p.m.
May 17.—Union Corporation, Ltd. (a), 11 a.m.
May 21.—Meyer and Charlton (a), 11 a.m.
New Goch Gold Mines (a), 12 noon.
Roodepoort United Main Reef (a), 3 p.m.
West Rand Consolidated (a), 4 p.m.
May 22.—Cinderella Consolidated (a), 11 a.m.
Aurora West (a), 12 noon.
Rand Collieries (a), 3 p.m.
New Steyn Estate (a), 3.30 p.m.
Sacke Estates (a), 4 p.m.
May 22.—City Deep (a), 11 a.m.
Robinson G.M. (a), 12 noon.
May 25.—Crown Mines (a), 10.30 a.m.
Durban Roodepoort Deep (a), 12 noon.
Rand Mines (a), 2.30 p.m.
May 25.—New Kleinfontein Co., Ltd. (a), 11 a.m.
May 25.—Apex Mines, Ltd. (a), 10.30 a.m.
May 28.—Consolidated Langlaagte Mines, Ltd. (s), 11.30 a.m.
Langlaagte Estate and Gold Mining Co., Ltd. (s), 12.15 p.m.
May 28.—Consolidated Langlaagte Mines, Ltd. (a), 11.15 a.m.
Langlaagte Estate and G.M. Co., Ltd. (a), 12 noon.
Randfontein Central G.M. Co., Ltd. (a), 3 p.m.
Randfontein Estates G.M. Co. (Wit.), Ltd. (a), 3.30 p.m.
May 29.—New Primrose G.M. Co., Ltd. (a), 11.30 a.m.
New Unified Main Reef G.M. Co., Ltd. (a), 11.45 a.m.
Witwatersrand G.M. Co., Ltd. (a), 12 noon.
New State Areas, Ltd. (a), 2.40 p.m.
Van Ryn Deep, Ltd. (a), 3 p.m.
Government G.M. Areas (M.) Cons., Ltd. (a), 3.45 p.m.
May 29.—Monteleo Diamonds, Ltd. (a), 4.15 p.m.
May 30.—Knight Central, Ltd. (s), 11 a.m.
May 30.—Witwatersrand Deep, Ltd. (a), 2.30 p.m.
June 5.—Brakpan Mines, Ltd. (s).
Leeuwpoort (African Farms) Tin Mines, Ltd. (a), 10 a.m.
June 5.—Welgedacht Exploration Co., Ltd. (a), 11 a.m.
June 6.—S.A. Townships Mining and Finance Corporation, Ltd. (a), 10.30 a.m.
June 8.—West Springs (a), 11 a.m.
Daggafontein Mines (a), 11.30 a.m.
Springs Mines (a), 12 noon.
Brakpan Mines (a), 2.30 p.m.
Rand Selection Corporation (a), 3.15 p.m.
New Era Consolidated (a), 3.45 p.m.
June 9.—Transvaal Coal Corporation (a), 10.30 a.m.
Anglo American Corporation (a), 11 a.m.

State Mines "Eminently Satisfactory Position."

ORE RESERVES INCREASE IN QUANTITY AND VALUE—PROFESSOR LAWN REVIEWS THE PAST YEAR AND PREDICTS A PROSPEROUS FUTURE.

In the course of his annual report on the State Mines for the year 1922, Professor J. G. Lawn, the consulting engineer, writes:—

The principal event of the year was the strike of European workmen, which commenced on 10th January and developed into an armed revolt about 9th March. Work ceased on the mines from 10th January to 13th February, on which latter date General Smuts issued an appeal to the companies and employees to resume work. On most mines work was carried on from this date on a limited scale, although the bulk of the men did not return to work. When the revolt started work again ceased on all mines, and was not resumed until 16th March, but its effect, owing to the depletion of the native labour force and the consequent disorganisation which it entailed, was felt until the end of April. The mine has always been popular with natives, and was one of the first to obtain a sufficient number to enable mining and development operations to be carried on at a normal rate. At the end of May 8,766 natives were employed, as compared with an average of 8,229 natives for the year ended December, 1921. In spite of the disturbances, your company had a very good year, as the figures given below illustrate. It must, however, be clearly remembered that a comparison with previous years is somewhat misleading, owing to the period of restricted operations

Government Areas New Circular Ventilating Shaft.

Three Years' Results.

The results of the last three years are as follows, the standard price of gold being taken in each case:—

	1920.	1921.	1922
Tons Milled ...	1,515,000	1,625,500	1,357,000
Fine Ounces	603,239·655	665,819·198	600,871·084
Revenue from Gold	£2,562,399	£2,828,220	£2,552,351
Working Costs ...	£1,680,361	£1,757,911	£1,269,848
Working Profit ...	£882,038	£1,070,309	£1,282,503
Revenue per ton...	33 9·9	34 9·6	37 7·4
Costs per ton ...	22 2·2	21 7·6	18 8·6
Working Profit per ton ...	11 7·7	13 2	18 10·8
Development footage	38,195	39,072	34,261

In addition to the working profit of £1,282,503, the premium on gold resulted in a credit of £225,523, making the total working profit for the year £1,508,026, as compared with £1,762,490 for 1921. From the working profit of £1,508,026 must be deducted the sum of £72,591, expenditure incurred in connection with the general strike. Another factor which affected the profit for the year was the reduced price of gold. The average price obtained for gold for the previous year was £5 5s. 9d. per fine ounce, whereas the price for 1922 averaged £4 12s. 5d. per fine ounce; this decrease represents no less a sum than £400,583.

State Mines Shaft No. 4: A New Photo.

On the termination of the strike it became possible to reorganise the labour and to obtain increased efficiency from the natives, in consequence of which there has been a considerable reduction in the working costs, with the result that the average working costs for the last quarter were 18s. 4d. per ton milled, while the average for the corresponding period of 1921 was 21s. 4d. per ton.

Costs and Railway Rates.

While, through the reorganisation of underground work, increased efficiency and various economies, considerable reductions have been effected in the working costs, it is hoped further reductions may be made in respect of the cost of stores. The prime cost of material has fallen considerably, but only a very slight reduction has taken place in the high railway rates, which form a large proportion of the cost of stores, and to which reference was made in last year's report. A little while ago the Minister of Railways stated that cheap transportation was "the soul of business," and it is hoped that the mines will soon get some relief from the heavy burden they have to bear in respect of transport of material to the mines. It is iniquitous that while prices of [illegible] are maintained at practically the highest level they reached during all the abnormal conditions which prevailed during and after the war. While every endeavour is being made on the mine to economise in the use of stores, until some substantial reduction takes place in railway charges it is unlikely that any material decrease in working costs will be effected under this head.

During the year the percentage of waste sorted out was increased from [illegible] per cent. in 1921 to [illegible] per cent. for 1922 and this resulted in increasing the average value per ton of the gold recovered by approximately half a pennyweight. A considerable quantity of ore was obtained from reclaiming and sampling abandoned stopes, the ore from this source being of high value.

The Circular Shaft.

The circular shaft encountered a much greater depth of dolomite than had been anticipated. A considerable quantity of water was struck at a depth of [illegible] feet, and an increasing volume hindered the progress of the shaft. In August the erection of the permanent sinking gear was completed. At the end of the year the shaft had reached a depth of 217 feet and the water, which at one time amounted to one and a quarter million gallons per day, had fallen to three-quarters of a million gallons per day. This water is a valuable asset to the mine, and a small shaft in the immediate vicinity has been sunk, from which the water may be pumped when it is finally shut off from the Circular Shaft. When the water zone has been passed more rapid sinking will be possible, and when the shaft is completed the conditions underground will be greatly improved, and it will then be possible to consider the advisability of increasing the reduction plant. The development footage accomplished during the year totalled 34,261 feet, and is only 4,811 feet less than the previous year, which must be considered as excellent, as it was the result of practically nine months' work. The footage on reef totalled 13,473 feet, 13,230 feet of which were sampled. The payability shows an improvement, the percentage of payable reef being 70·22 per cent., having an average value of 11·6 dwts. over 60 inches of reef. In accordance with our usual practice, the year's reserves were recalculated at the end of December, and were estimated to stand at 10,324,000 tons, having an average value of 8·8 dwts. over 76 inches of reef, a slight increase in quantity and in value as compared with the previous year. The ore reserves include ore of a value of 4 dwts. and over. The position on your mine is eminently satisfactory, and a prosperous future is assured. The steadfastness and energy of your manager and his staff during the difficult and dangerous period of the strike were entirely praiseworthy.

Village Deep's Year.

REDUCED WORKING COSTS THE FEATURE.

The following tabulation summarises the salient features of the work of the past three years by the Village Deep:—

	1920	1921	1922.
Tonnage Milled	[illegible]	581,800	544,050
Working Costs per ton	[illegible]	29s. 5d.	25s. 4d.
Revenue per ton with gold at 85s. per ounce	25s. 2d.	26s. 7d.	26s. 8d.
Working profit per ton with gold at 85s. per ounce	*3s. 8d.	*2s. 10d.	1s. 4d.
Working profit with gold at 85s. per ounce	*£100,791	*£82,888	£36,786
Additional revenue represented by difference between 85s. per ounce and actual price obtained	£229,372	£195,634	£51,376
Total Working Profit	£128,581	£112,746	£88,162
Development Footage	16,909	20,047	16,272
Ore in reserve, tons	[illegible]	2,087,700	2,115,400
Average value of ore reserve, dwts. per ton	[illegible]	6·3	6·1
Average strength of coloured labour force	[illegible]	3,920	4,203

* Loss.

In his annual report, Mr. J. Whitehouse, the Consulting Engineer, writes:—

Operations during the year were seriously affected by a strike of white employees, which extended from the 10th January to the 17th March, and during these first three months of the year a loss of £53,987 was incurred. The reduced price of gold was a factor of considerable importance. The average net value per fine ounce during the 1921 period was 105s. 3d., but during the period under review it averaged only 89s. 11d. This decrease was equivalent to an amount of £152,116 on the gold output. In view of the dislocation of operations caused by the strike and the reduced price of gold, the total working profit for the year of £88,162 must be considered satisfactory. The outstanding feature of the year's operations is the marked reduction in working costs. These averaged 25s. 4d. per ton milled as against 29s. 5d. for the previous year. In this average of 25s. 4d. are included the costs for the first three months which, owing to the strike, were abnormal. During the last six months of the year the working costs averaged 22s. 5d., or a decrease of 7s. per ton compared with the average of 1921. This very material reduction in working costs has resulted largely from the reorganisation of underground work carried out on the conclusion of the strike. It will be observed from the above tabulation that as a result of reduced working costs, taking gold at standard value, operations show a profit for the first time for several years. The gold recovery per ton milled was 6·35 dwts., as against 6·33 dwts. for the previous year. This grade has been maintained by most careful mining, in spite of the increasing depth of the mine. Jackhammer machines have been used exclusively in stoping operations, every care having been taken to maintain as narrow a stoping width as possible, and the results for the year reflect great credit on the management. By the intelligent exploitation of Jackhammers and the attention paid to steel used with these machines, breaking costs have been considerably reduced, and further progress is expected in this work during the current year. The reduction costs at this mine have shown a very considerable decrease during the year, part of which decrease is due to the increased tonnage milled. The average cost per ton milled for the last six months of the year was 3s. 1d. Development operations totalled 16,272 feet. The tonnage of payable ore developed totalled 559,500 tons of an estimated value of 6·1 dwts. per ton. The ore reserve remeasured and revalued at 31st December, 1922, was as follows:—Available, 1,572,900 tons, value 6·1 dwts.; shaft pillars, etc., 542,500 tons, value 6·0 dwts. Total, 2,115,400 tons; value 6·1 dwts. In addition, there remain in the mine, developed but unvalued, 393,300 tons, the valuation of which will be done during the current year. The grade of the reserve, compared with the previous year, shows a drop of 0·2 dwt. This is due to a small increase in the stoping width and the slightly lower value of the ore developed during the year. Compared with 1921, the total ore reserve shows a slight increase in tonnage. The acquisition of a further area situated on the eastern boundary of the mine, in which development will take place during the year, should result in an increase in the ore reserve at the end of the current year. The capital expenditure for the current year will be principally on account of excavations for a new pumping station on the 32nd level, and the engine chambers on the 31st level for the new subsidiary inclines. I wish to express my appreciation of the loyal support rendered by the staff during the strike and armed rebellion. Messrs. W. C. Coe and H. P. Townsend, both of whom held the position of Acting Manager during the year, are to be congratulated on the excellent manner in which operations have been carried on.

Congo Railways.

The Belgian Senate has passed the Bill approving of the Colonial Government's grant of one hundred million francs to the Congo Railway Company, to reconstruct the Leopoldsville-Mataldi line. The capacity of the line will thus be increased to a million tons, while a plan is on foot to electrify this line.

E.R.P.M.'s Future "Causes Grave Concern."

CONSULTING ENGINEER'S VIEWS—RECENT POLICY DESCRIBED.

Recent losses on working at the E.R.P.M. invest the latest annual report by the Consulting Engineer, Mr. Jas. Whitehouse, with more than usual interest. He writes, under date February 23:—

The following tabulation summarises the main features of the work of the past three years:—

	1920.	1921.	1922.
Tons milled	1,460,000	1,506,000	1,175,900
Working costs per ton milled	27s. 7d.	26s. 8d.	23s. 11d.
Revenue per ton with gold at 84s. per ounce	23s. 0d.	22s. 1d.	20s. 10d.
Working loss per ton with gold at 84s. per ounce	4s. 7d.	4s. 7d.	3s. 1d.
Working loss with gold at 84s. per ounce	£334,459	£342,239	£183,068
Additional revenue represented by difference between 84s. per ounce and actual price realised	£527,453	£420,497	£90,464
Total working profit	£192,994	£78,258	*£92,604
Development Footage	18,566	18,816	20,601
Ore reserve, tonnage	2,410,850	1,946,650	1,724,350
Ore reserve, value, dwts. per ton	6.1	6.7	6.7
Average strength of coloured labour force	11,225	12,051	10,414

* Loss.

The strike of white employees, which lasted from the 10th January to the 17th March, 1922, resulted in a very serious financial loss to your Company. During the first three months, the working loss amounted to £141,550, and, although small profits were made in the latter half of the year, the final working deficit for the year amounted to £92,604. A further adverse factor was the rapid decline in the price of gold, from an average of 105s. 3d. per fine ounce in 1921 to an average of 90s. 2d. in the year under review. This decrease on the gold output of 291,745 ounces was equivalent to a fall in revenue of £220,024. Working costs for the year averaged 23s. 11d. per ton milled. This figure includes the heavy expenditure during the strike period, when milling was practically suspended. During the last six months, when operations were normal, the working costs averaged 21s. per ton, as compared with 26s. 8d. per ton, the average for 1921. The very satisfactory decrease in costs shown above was due to the reorganisation of underground work on the conclusion of the strike. The elimination of redundant employees has made it possible to employ the labour force on a more economic basis, and has resulted in an improvement in efficiency and output per employee. Development was restricted in the early part of the year by the strike and the shortage of labour which followed. During the last six months the rate of development was increased, and the total work accomplished amounted to 20,691 feet, an increase of 1,785 feet as compared with the previous year. Of the total footage sampled, 8,095 feet, or 57 per cent., exposed payable reef, and the tonnage developed corresponding to the footage amounted to 274,126 tons, of an average value of 6·6 dwts. Of the above payab'e footage nearly 3,500 feet were for the purpose of internal development, and the remainder opened up payable ore in virgin ground. The values so exposed have provided some encouragement to continue development in depth, but it will be observed that the ore deve'oped during the year was far short of that required to maintain the ore reserve. The policy followed in recent years of confining development principally to the Drietontein and Comet Deep Sections has been continued, and very little work has been done in the eastern areas where development operations have, in the past, exposed disappointing values. In the Drietontein and Comet Deep Sections, stretches of high grade ore have been exposed; these, however, do not persist over any extended distance, and alternate with similar stretches of unpayable ore which will have an adverse effect on the grade obtainable when mining commences in these areas. Of the tonnage developed during the year, a considerable proportion was blocked out in the Drietontein Section, and the output from this area will tend to increase. To meet these conditions it will be necessary to provide further equipment for the Farrar Secondary Shaft, and also to instal a haulage level beteween this shaft and the Angelo Deep West Vertical Shaft on the 27th level. This work is in hand. Considerable advance has been made in the substitution of jack-hammer machines for native hammer boys, and the increased efficiency following on a strict supervision of machines and drill steel has been very marked. Research work on this mine during the year has resulted in important improvements in the preparation of drill steel, and this should have far-reaching effects on the efficiency of breaking operations. The ore reserve has been remeasured and revalued as at the 31st December, 1922, and is as follows: Available, 1,431,000 tons, value, 6·5 dwts.; shaft and boundary pillars, 293,300 tons, value, 7·6 dwts. Total, 1,724,350 tons, value, 6·7 dwts. In addition to the above there is an amount of 247,320 tons, valued at 5·9 dwts., which is contained in isolated blocks scattered all over the mine. These are at the present time inaccessible, but further work may render a portion available at some future time. The tonnage in reserve shows a decrease of 222,300 tons as compared with last year, the value per ton remaining the same. The above available reserve is quite inadequate to supply the mill tonnage required for the present scale of operations. The proportion that can be obtained from the reserve during the current year will again be less than that mined from lower grade sources, and it will be impossible to obtain a mill grade comparable with that called for by the value of the reserve. It will be seen, therefore, that the continuation of operations is largely dependent upon ore obtained from reclamation, the value of which source of supply cannot be gauged with any accuracy. The facility with which this ore can be obtained has been reduced year by year, and, with the return of the price of gold to practically standard value, the maintenance of a yield per ton sufficient to ensure a working profit has now become a matter of the greatest difficulty. In these circumstances, the future of the mine must continue to cause grave concern. The Manager, Mr. E. C. J. Meyer, and his competent Staff, must be congratulated on having brought the mine through a very difficult period. Great credit is due to them for their loyal work during the strike and the subsequent successful reorganisation.

South African Gold Trust.

Lord Harris—who has the reputation of being something of a pessimist—was able to speak in cheerful strains at the recent meeting of the South African Gold Trust. He drew special attention to the current increased activity in trade and the Stock Exchange, thus providing the atmosphere in which finance concerns like the Gold Trust best thrive. Already the company's assets have distinctly appreciated, and the directors work out their market value at the equivalent of over 24s. per share, against the current quotation for Gold Trusts themselves of only about 16s. Meanwhile, Lord Harris was able to give a generally satisfactory review of the prospects of the company's varied interests in all parts of the world. Having as much as £125,000 in War Loan the company is, moreover, in an ideal position to take prompt advantage of any promising new business which may present itself.

The Excellent Prospects of the Van Ryn Deep.

MINE IN "VERY SOUND POSITION"—PROF. LAWN ANALYSES THE YEAR'S WORK AND THE ORE RESERVES.

In his annual report for 1922 on the Van Ryn Deep, Professor Lawn, the consulting engineer, writes: The principal event of the year was the strike of European workmen, which commenced on 10th January, and developed into an armed revolt about 9th March. Work ceased on the mines from 10th January to 13th February, on which date General Smuts issued an appeal to the authorities and employees to resume work. On most mines work was carried on from this date on a limited scale, although the bulk of the men did not return. When the revolt started work again ceased on all mines and was not resumed until 16th March, but its effect, owing to the depletion of the native labour force and the consequent disorganisation which it entailed, was felt for some considerable time, and it was not until the end of April that milling operations became normal. At the end of May the number of natives employed totalled 3,628, as compared with an average of 3,989 for the year ended 31st December, 1921. In spite of the disorganisation and interruption of the work, the Company had a very successful year, as the figures given below illustrate. It must, however, be always remembered that a comparison with previous years is somewhat misleading, owing to the restriction of operations during the first half of the year.

The Year's Results Compared.

The results of the last three years are as follows, the standard price of gold being taken in each case:—

	1920.	1921.	1922.
Tons milled	583,550	611,400	531,010
Fine ounces	305,824.650	327,006.789	255,802.642
Revenue from Gold	£1,299,080	£1,381,294	£1,086,581
Working Costs	£747,951	£810,777	£578,267
Working Profit	£551,129	£570,517	£508,314
Revenue per ton milled	44/6.3	45/2.2	40/11.1
Working Cost per ton milled	25/7.6	26/6.3	21/9.4
Working Profit per ton milled	18/10.7	18/7.9	19/1.7
Development Footage	15,182	16,900	12,494

In addition to the profit of £508,314, the premium on gold resulted in a credit of £95,826, making the total working profit for the year £604,140, as compared with £922,018 for 1921. While a small profit of £1,019 was made during the strike period, January to March, the actual expenditure incurred on account of the strike amounted to £37,152. The net result of the operations for the year was £280,980 less than for the previous year, and the decrease is attributed very largely to the strike and the resultant reorganisation, but a factor of importance is the reduced price obtained for the gold. The average price during 1921 was £5 6s. per fine ounce, whereas the average for 1922 was only £4 12s. 5d., a decrease which represents no less a sum than £173,728 to your Company.

Since the Strike.

The reorganisation of underground work and the increased efficiency when things became normal after the strike resulted in considerable reductions in working costs. As an illustration of the improvement which has taken place, it is satisfactory to note that the working costs for the last quarter of the year averaged 20s. 9d. per ton, as compared with 25s. 1d. for the corresponding period of 1921. Further reductions may be achieved through economies in stores and in the adoption of new methods of treatment of the ore, and also in the better handling of the rock underground. In this connection, as the result of experiments which proved successful, the amalgamating plates in the mill have been replaced by corduroy. While the extraction in the mill has suffered by about seven per cent., the overall extraction has improved somewhat, and a saving will be effected in the reduction costs. Underground it has been decided to instal an electric haulage at the 9th Level, to convey the ore from the East to the West Shaft, and to replace the present steam hoist at the latter shaft by an electric one. This change will effect a saving in the transport of ore underground and hoisting charges, and will render the handling of the ore more convenient than at present.

Development and Ore Reserves.

Development during the year was chiefly devoted to opening up the north-eastern extremity of the mine and to making arrangements for exploring the south-eastern leg. The former work was practically finished at the end of the year, and the latter made good progress. Results in both cases were highly satisfactory. Very little development was done in the Western Section of the mine, as the year was mostly occupied in making arrangements for stoping and transporting ore already developed in that area. The total development accomplished amounted to 12,494 feet, of which 4,362 feet were on reef, and sampling showed that 84 per cent. was payable, having an average value of 31·8 dwts. per ton over 27 inches of reef. The ore reserves were recalculated at the end of the year, and were estimated at 3,427,300 tons, of an average value of 8·4 dwts. over 77 inches of reef. These figures include 286,000 tons of ore from the Western Section, of an average value of 5·4 dwts. over a stoping width of 118 inches. Compared with those of the previous year, the ore reserve figures show an increase of 110,300 tons and a decrease of ·8 dwt. in the average value, due principally to an increase of 4 inches in the stoping width. The mine is in a very sound position, and the prospects for the future are excellent. The steadfastness and energy of your Manager and his staff during the difficult and dangerous period of the strike were entirely praiseworthy.

S.A. Coal for Germany.

According to a Hamburg message, a number of vessels belonging to the German South Africa Line are expected to arrive there this week with large cargoes of South African coal. The price of this coal is not higher than that of coal imported from England, while the quality is said to be sufficiently good to make it suitable for the requirements of the industry for which it is mainly intended.

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The "T.C.L." as a Pioneer of "Outside Mining."

REVIEW OF TRANSVAAL PROGRESS AND PROSPECTS—IMPORTANT MINERAL SURVEY BEGUN.

The annual report of the "T.C.L." has the following *inter alia*:—

Mineral Interests.

Much useful work has been accomplished under the heading, though the financial results are not reflected by any very gratifying figures in the Profit and Loss Account. The unfortunate coal strike at the commencement of the year involved further loss of oversea markets and reduction of bunker trade. The Base Metals Market became severely depressed during the first half of the year, and the price of tin, in which mineral this Company is chiefly interested, dropped to unexpectedly low levels. A revival occurred in the latter part of the year, and advantage was taken of it to crush accumulations of ore at the Groenfontein Tin Mine, details of which are given later.

An Important Coal Interest.

No further work has been done on the Van Dijk's Drift coal property, and as stated in my report for 1921 it may be some years before circumstances will warrant the development of this proposition. Indeed, one result of the unfortunate coal strike already referred to has been to give a serious set back to the South African coal trade, and it will take some time and much uphill work before it can recover the share of export trade that it is entitled to expect. It must also be remembered that a great deal has to be done to remedy the present lack of railway and harbour facilities. The projected new railway referred to in the Chairman's speech at the last annual meeting as likely to give Van Dijk's Drift the necessary railway connection has not been included so far in the Government's authorised programme of construction. The Company sold the surface rights of this farm several years ago when its potentialities as a coal property were not anticipated. During the year it succeeded in re-acquiring on a very satisfactory basis the surface rights in respect of 1,890 morgen covering the most important section of the farm. It is of considerable importance that, when the time comes to develop this proposition, the Company's operations should be in no way hampered or restricted by reason of its not owning the surface rights. The latter had passed into the hands of the Government who intended cutting it up into small holdings for settlers, which would have made the Company's position as mineral holder very awkward. The difficulty has been overcome by giving Government in exchange for the surface rights of these 1,890 morgen of Van Dijk's Drift the surface rights of 1,000 morgen of the farm Holfontein No. 1, Springs, which adjoins the Government's small holdings on the farm Modderfontein No. 46.

Groenfontein Tin.

The Groenfontein Tin Mine was the only producing mine operated by the Company during the year. For the first five months work was concentrated on securing payable ore for the mill. Crushing operations on the accumulated ore restarted on the 9th June, and were completed on the 4th September, after which date the sands were re-treated and a general clean up effected. Owing to the fall in the price of metal the revenue recovered barely met working expenses. The latter, however, include the cost of a rearrangement of the plant which not only effected economies in supervision and running, but also liberated certain plant and made it available for sale. Two transformers and some piping have already been sold, realising £643 11s. 4d., which amount has been credited to Capital Account. In all 3,637 tons of ore were crushed, producing 115 long tons of concentrate. This, together with 13·3 tons of alluvial concentrate taken over from Tributors, realised £15,161 14s. 1d. The operating costs, including the rearrangement of the plant, totalled £15,139 1s. 1d., leaving a working profit of only £22 13s. The outlook as far as development was concerned not being at all satisfactory and the price of metal having fallen so severely, it was decided to close down the mine. It was found, however, that closing down would be a somewhat expensive business owing to the scattered nature of the property and that, after taking into consideration the tin ore which would be recovered, it was possible to carry on mining operations on a very reduced scale at comparatively little additional cost to that of closing down. Under the latter arrangement there would also be the chance, however remote, of striking some occurrence of value. The staff was therefore paid off with the exception of the Acting Manager, one white man and fifty-nine natives, whose operations were restricted to work on actually visible ore bodies, the Company's adviser being of opinion that the position of the mine did not warrant development or exploratory work with tin at its existing price. In view of the low price of tin, combined with unsatisfactory disclosures, it was not considered that any further expenditure was warranted in connection with the tin prospect on Welgelegen No. 357, Waterberg, and operations were suspended in March.

Tributes.

There has been a still further falling off in the revenue from this source and for the same reason as given last year, viz., economic conditions generally and the depression in metal markets resulting therefrom. Operations at the Penge Asbestos Mine were again severely restricted. Germany is the chief market for the product of this mine and the outlook there at the moment is far from promising. The output for the year was only 365 tons, and the royalty received amounted to £1,173 18s. The Blane Witkop Zinc Mine, in which this Company has a 10 per cent. interest, is still closed down. The tributors are endeavouring to reconstruct their Company, but so far without success. They are, however, hopeful that the recent rise in the price of spelter will assist them in this matter. Despite the low price of tin, the Tributor of Mutue Fides Tin Mine succeeded in carrying on operations throughout the year, though the Company had to meet him by somewhat reducing its terms in respect of royalty while the price of metal remains low. 136·8 short tons of concentrate were produced, and the royalty received amounted to £1,086 16s. 1d. No work was done on the Weynek Tin Tribute during the year and no royalty was received. Operations have been suspended with the Company's consent pending a recovery in the price of tin. The operations of the Olifants Tin Mine were again upon a very small scale. Only 13·45 short tons of concentrate were produced. No royalty accrued to the Company.

The Montrose Gold Mine worked continuously during the year, but, owing to the increase in costs as the workings extended in depth and to the decreased revenue resulting from the drop in the value of gold, it was found necessary to meet the tributor by reducing the terms of royalty to some extent. The mine produced 1,620 fine ounces of gold, and the royalty received amounted to £612 8s. 5d. Rather than face the necessary capital expenditure to put the proposition upon a proper footing, the tributors of the Rietfontein Gold Mine decided to abandon their tribute. Only 50.17 tons of pyritic concentrate were recovered. The revenue received amounted to £517 9s. 2d., but the tributors are still indebted to the Company to the amount of £325 6s. 5d., against which it holds a lien over plant, etc., left by them on the property. Several inquiries have been made regarding a further lease of this mine, but no agreement has yet resulted. An entirely new tribute lease has been granted in respect of the [illegible] gold claims, Barberton district. The tributor completed the erection of a 10-stamp battery, with sands and slimes plant, at the end of December. Royalty accrues from 1st January, 1923, in which [illegible] A small number of [illegible] rights [illegible] the Company's [illegible] and Zoutpansberg districts. [illegible] further [illegible] gold. The Company [illegible] investigation of the farms [illegible] but the results were [illegible] An investigation was made of a [illegible] of gold-bearing alluvial along the [illegible] district, but the results [illegible] In addition to these prospecting activities, a number of the Company's farms were examined during the year by the Company's geologists, a policy which is now being systematically followed in respect of those areas of which the Company has little or insufficient knowledge. The net result of the Company's prospecting operations for the year has been a deficit of [illegible] made up as follows: Prospecting expenditure, [illegible] 1d.; maintenance of properties [illegible] The small profit of [illegible] made by the [illegible]nfontein Tin Mine was utilised to write down the cost of some others.

Mineral Investments.

As anticipated in our 1921 report, the results obtained during the year by the [illegible] Tin Mines, Ltd., were very disappointing. The property was closed down in September and the Company placed in voluntary liquidation. Any liquidation distribution will be of a negligible character. The [illegible] exhausted all payable ground, was placed in liquidation in December. It is anticipated that a liquidation distribution of approximately 9s per share will be made. This Company holds 7,110 shares in this venture, which stand in the books at just under 7s per share.

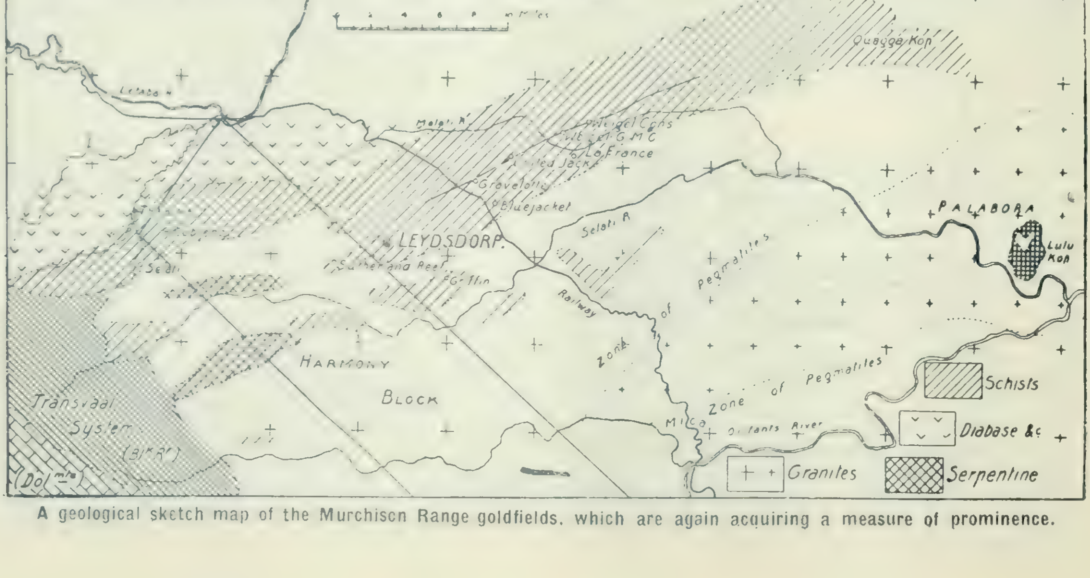
Mineral Survey.

Considerable progress was made during the year with the general survey of the Company's mineral rights, and the work when completed will prove a most valuable record. The chief objects of the investigation were (1) to enable the Company to frame a programme for further prospecting in those areas known to possess mineral possibilities, and (2) to assist the Company in formulating a policy as to the disposal or retention of mineral rights over farms of which it sold or has already sold the surface rights. The Company owns the mineral rights of a large number of farms, the surface rights of which it has sold and upon which the indications are hardly sufficient to justify it in expending the money necessary to prospect them. A scheme has now been prepared for enlisting the co-operation of the surface owners in such cases by offering them a share in the profits that might result from any discovery made as a result of information supplied by them.

The Iron and Steel Merger.

In the course of an interesting paper on "Syferfontein Iron Ore," in *The Journal of Industries*, Dr. Wagner writes: "As regards the disposal of the ore prospects are not very hopeful. *The recent agreement entered into between the South African Iron and Steel Corporation, Ltd., and the Union Steel Corporation, Ltd.*, provides for the erection of large blast furnaces and steel furnaces at Pretoria. If this programme be carried out, it is very doubtful whether iron-smelting on a large scale will be undertaken anywhere else in South Africa for very many years to come. The only chance of satisfactorily disposing of the Syferfontein ore would then be to sell it to the South African Iron and Steel Corporation for smelting at Pretoria." The italics are ours, and indicate the first official statement on the subject.

The Leydsdorp Goldfields.



A geological sketch map of the Murchison Range goldfields, which are again acquiring a measure of prominence.

A New Era for Randfontein.

PROF. LAWN PREDICTS A LONG PERIOD OF PROSPERITY—MINE ESTABLISHED ON A PERMANENT FOOTING.

In his annual report on the Randfontein Central, Prof. Lawn, the Consulting Engineer, writes:—

The details of the work accomplished on your mine during the year ended 31st December, 1922, are given in the General Manager's report.

During this period your mine entered upon a new era. In spite of the disturbances in the early part of the year, the end towards which your policy has been directed for several years past had begun to come in sight, though it was not altogether attained by the end of the year. There were three factors which were of the very greatest importance to the mine. First of all, the two new Deep Level Shafts were brought into commission, and the new system of stoping was to some extent established. This made the continued working of the mine possible, otherwise it must have closed down ere this. Secondly, the altered conditions after the strike in the first quarter of the year made the working of the mine on the basis of reasonable working costs possible; and, thirdly, there was the fact that at the end of June the mine had an adequate labour supply which it had not enjoyed for a long time. The latter is a more important factor at Randfontein than on most of the mines of the Rand. On account of the steepness and narrowness of the reefs, it is impossible to employ machines in stoping, so that, unless hand labour is available, it is impossible to get the necessary tonnage to keep the mill supplied.

The Battery Reef.

The Battery Reef on the Randfontein Deep Section of the property is opening up in a most satisfactory way. Two inclined shafts are being sunk, and development is being pushed with all possible speed. The opening up of this section really means the establishment of a new outcrop mine. A steadily increasing tonnage is being won from this source, but it will still be some time before this section of the mine is supplying the tonnage of ore for the mill which it is intended to draw from it.

New System of Stoping.

The new system of stoping is proving an entire success, and when it completely replaces the former system in the old mine further benefits will accrue. Then it is intended to bring the tonnage crushed at the Central Mill up to 200,000 tons per month. This mill was designed to crush 165,000 tons per month. In the days when Randfontein crushed larger tonnages other mills were working in addition. This centralisation will naturally require certain adjustments, and will take a little time to accomplish, but once it is running it will prove a distinct advantage. Indeed, although the position of the mine has materially improved as compared with a year ago, yet there are further improvements in sight which will be gradually achieved, and these should lead to further reductions in working costs. It must be remembered that Randfontein is a large proposition employing nearly 1,200 Europeans and 17,600 natives. Very little ore was crushed during the first quarter of the year owing to the strike, and, apart from the loss of revenue, the direct expenditure due to the strike amounted to £138,698. On the termination of the strike it was possible to reorganise the underground work, but it was not until the end of June that the native labour force was sufficient to enable work to be carried on on an adequate scale.

The Price of Gold.

A factor which affected the financial results for the year was the heavy fall in the price of gold. The price obtained during the year averaged £4 12s. 2d. per fine ounce, compared with the average price of £5 6s. 2d. for 1921. On the large output for the year of 394,302 fine ounces this decrease in the price represents no less a sum than £276,011. The cost of exchange has also borne heavily on the mines of the Rand, and in the case of your mine amounted to £32,[illegible]. Indeed, by December, what with the reduction in the premium on gold and increase of exchange, the mines had [illegible] better off than if gold had been at par and the exchange reduced to its present rate.

Working Results.

Although, owing to the disturbances in the early part of the year, any detailed comparison of the results obtained with the results of the preceding year cannot be profitable, it is gratifying to note that, with the improvement in working conditions which became possible after the strike and the increased efficiency, the working costs for the last quarter of the year were 20s. [illegible] per ton, as compared with 27s. 8d. for the corresponding quarter of 1921. It is also interesting to note that, whereas the working profit obtained for the last six months of 1921 amounted to approximately £159,751, that for the last six months of 1922 was £294,500, in spite of the much lower price of gold. Indeed, it may be said that, after long and arduous struggles, the expenditure of large sums of money, and much disappointment, your mine has at last been established on a permanent footing, and there is every hope that a long period of prosperity lies ahead.

Recent Development and Ore Reserves.

During the latter half of the year development was pushed vigorously, the total footage developed for the year amounting to 39,152 feet, which, considering the restricted period of operations, compared favourably with 47,978 feet accomplished in 1921. The footage sampled for the year amounted to 19,675 feet, of which 11,690 feet were payable, having an average value of 18·7 dwts. over 20 inches of reef. It must be remembered that the new system of driving haulage tunnels under the reefs and not development drives along the reefs makes it somewhat difficult to arrive at an exact estimate of the value of the whole of the reserves. On the whole the development was very good. In the southern part of the mine practically the whole of the Randfontein Leader and West Reef were payable. In the northern section there was a patch in the West Reef in the neighbourhood of the old Robinson where values were low, but below this patch the results are encouraging; the Randfontein Leader was payable throughout. It is intended to drive a tunnel northwards under Sections 8 and 9 to explore the extreme northern part of your property at a considerable depth below the old workings. The ore reserves, which were recalculated at the end of the year, were estimated to stand at 1,274,000 tons of an average value of 6·5 dwts. over 48 inches of reef. This includes 439,800 tons of Battery Reef of an average value of 6 dwts. over 53 inches of reef. The steadfastness and energy of your Manager and his staff during the difficult and dangerous period of the strike were entirely praiseworthy.

METAL PRICES.

The cables from London [illegible] the following:

On the London Metal Exchange standard copper closed at £73 10s. cash and £71 [illegible] three months; electrolytic copper £82 sellers [illegible] and £82 10s. buyers [illegible] £82 10s.; standard tin, £215 2s. 6d. cash, £215 17s. 6d. three months; foreign lead [illegible]; spelter £2[illegible]; quicksilver [illegible]; silver [illegible] per ounce; bar gold, 88s. [illegible]

New States.

PROMISING PROSPECTS.

PROF. LAWN'S REPORT.

Professor J. G. Lawn, in the course of his annual report for 1922 on the New State Areas affairs, states the work was interrupted by the General Strike of European employees, which commenced on the 10th January and development was not resumed until about the 9th March. On the 13th February General Smuts made an appeal to the Companies and employees to resume work, but owing to the isolated position of your mine, while a number of workmen expressed their desire to return, they were afraid to do so, and consequently it was not until after suppression of the revolt by the Government forces that work was resumed on the 16th March. The expenditure incurred in connection with the Strike amounted to £19,128. The work of excavating and equipping the main ore bins at the North and South Shafts was carried on during the year, and the main connecting drive between the two shafts was completed on the 18th July. The Development footage during the year reached a total of 27,561 feet, and taking into consideration the interruption of work in the early part of the year, may be considered satisfactory. Of the footage sampled, viz., 10,710 feet, 55·82 per cent. was payable, having an average value of 28·3 dwts. per ton over 22 inches of reef. A calculation of the ore reserves was made at the end of the year, and it was estimated that there were 1,000,000 tons of an average value of 8·5 dwts. over a stoping width of 68 inches. The reserves include ore of a value of 4·5 dwts. and over, and in addition it was estimated there are approximately 330,000 tons partially developed of the same average value as the ore reserves. A diagram is attached to the report illustrating the work which has been accomplished to the end of the year. The work of erecting the Reduction Plant, which has been fully described in earlier reports, proceeded well throughout the latter part of the year, and while it is too early to know the exact date when treatment of the ore will commence, it is expected that unless any unforeseen delays take place the plant will be running in May. The prospects of the Mine are full of promise. The steadfastness and energy of your Manager and his Staff during the difficult and dangerous period of the Strike were entirely praiseworthy.

Mr. Robert Wi'liams, of the Congo.

Mr. Robert Williams, the creator of the Benguella-Congo Belge line, well known on the Rand, and who is greatly interested in mining developments in the Congo, arrived at Beira about 10 days ago by the Guildford Castle from England. Mr. Williams' party included Mrs. Williams, the Hon. Miss O. M. Kitson, Mr. A. A. Thomson and Miss K. Greenwood. Mr. Williams and party left for Rhodesia, and after staying a couple of days at Bulawayo will proceed to Elisabethville, where preparations have been made for a complete inspection by Mr. Williams of the mining and other developments in the Katanga. It is many years since Mr. Williams first saw the sandpit on which Beira is now built, says the "Beira News," and in the course of a chat he pointed out the spot on the foreshore at Ponta Gea where he set up his tent in 1890—33 years ago. Mr. Williams and party left Bulawayo on Saturday for Northern Rhodesia and the Congo.

Recent Scientific Developments in Cement Making.

WHAT AMERICA IS DOING.

We are indebted to that valuable American production "The Mineral Industry" for the following information regarding the latest scientific developments in Cement-making and Testing.

Last year, as in 1921, the Joint Committee on Standard Specifications for Concrete and Reinforced Concrete in the United States of America held numerous meetings in connection with its work. In December, 1921, the specification as tentatively drawn was discussed at six sessions of the American Society of Civil Engineers, when criticism and comment on the report were presented by engineers, contractors, and others interested in the various subjects dealt with. And during 1922 the specification in its tentative form was presented for consideration to the American Society of Civil Engineers, the American Society for Testing Materials, the Concrete Institute, the Portland Cement Association, and the American Railway Engineering Association, the several engineering bodies represented upon and constituting the membership of the Joint Committee.

In the field of concrete an important contribution was recently made by Committee C-2 on Reinforced Concrete of the American Society for Testing Materials. It was in the shape of proposed tentative rules for the inspection of concrete and reinforced concrete work. This report, a well-considered and exhaustive one, deals with the all-essential matter of inspection, including the qualifications of the inspector as well as the character of the inspection required to secure safety and permanence in the large and growing volume of concrete construction.

Through its Committee on Fireproofing and its Committee on Concrete and Concrete Aggregates, the same society has recently done much valuable work calculated to lead to better standards in fire-resisting construction and improved methods in the selection and use of sands and aggregates.

A matter of importance to the cement industry and engineering profession alike has been the agreement concluded on the subject of specifications and tests for Portland cement, thus creating a single specification covering both commercial and governmental uses. This was followed by acceptance of the adopted standard on the part of the American Engineering Standards Committee and it is now known as American Standard Specification No. 1. To those who can look back to the early period of cement manufacture in the United States, when specifications were as many and varied as individual preferences in the matter, and who participated in the prolonged research and discussion covering the intervening time, this general acceptance of a single specification will seem an important epoch in the history and use of Portland cement in the United States.

In the manufacturing end of the industry increased prices for coal and increased freight rates thereon have brought the fuel problem to the front rank as an economic proposition. The waste-heat boiler operating with the waste gases of the rotary kiln has made rapid strides during the past couple of years, and many plants in various parts of the country have made successful and profitable installations. Although originally suggested and put into operation in the latter days of the last century, the first installations were not successful, but better engineering in both plants and boiler practice has made this form of waste-heat recovery a great feature of the year. The fuel engineer in the cement plant is another outcome of the desire to save coal and reduce cost. His work will be of great value to the future of the industry

West Springs.

GOVERNMENT LEASE INSPECTOR'S REPORT.

From the annual report on West Springs, written by the Inspector of Mining Leases, we take the following

No work has been carried out during the year in connection with the No. 2 or south shaft, the depth of which remains at 2,940 feet. It is estimated that the depth of the reef at this shaft is approximately 4,800 feet.

The following is a summary of the development work carried out at the No. 1 Shaft, West Springs, and from the Springs Mines property during the year: -Haulage-ways, 7,584 feet; drives, 1,774 feet; winzes and raises, 2,463 feet; cross-cuts, etc., 306 feet; total, 12,127 feet. Footage on reef, 8,416 feet; footage sampled, 8,450 feet; footage payable, 4,150 = 49·1 per cent. Average reef channel width payable footage = 33·5 inches. Average reef channel value payable footage = 14·06 dwt. Of the total development footage 872 feet were accomplished from the Springs Mines property. Compared with the previous year the total footage developed shows an increase of 4,827 feet. This increase would have been much greater but for the strike at the commencement of the year, mining work not getting into full swing until during May. Considerable faulting has been the cause of an appreciable footage being driven off the reef. In some instances the reef has been tested at intervals by diamond drilling and the reef value and width ascertained, but these results are not included in the foregoing table. The payable percentage of the footage sampled has increased from 20·8 per cent. to 49·1 per cent., and the average value from 432 inch dwt. to 471 inch dwt. compared with the previous year. The west haulage from the No. 1 shaft, Springs Mines, is being driven towards West Springs, and at the end of the year it had reached a point about 440 feet from the West Springs boundary. At this point the face was in high grade ore—the continuation af a rich shoot proved by this heading over a considerable footage, and it is hoped that this shoot will extend into the West Springs property. This will be the third heading from the Springs Mines to enter the West Springs property. Owing to the efficient system of ventilation, the main headings have been worked on the three-shift system since about the middle of the year. Mining operations at Brakpan Mines and more especially at Springs Mines indicate that the richer ore shoots have a decided tendency to trend in a north-westerly-south-easterly direction, and for this reason the West Springs main development headings have been set out in a north-easterly direction in order to intersect such shoots that may exist. There are now four of these headings being driven in the north-eastern section of the property; they run parallel and average about 1,100 feet apart. Therefore, any payable bodies of ore in this area should, with ordinary good fortune, be intersected. The development during the year has indicated the existence of payable shoots, but with the exception of a few comparatively short lengths of reef exposures, no ore of high grade was encountered. The development so far accomplished has been mostly of a primary nature with the main object of locating payable bodies of ore. The opening up of these bodies by secondary development to prove the tonnages and values was deferred in pursuance of the policy of the company outlined in my last annual report. The percentage of payability, together with the average value, viz., 471 inch dwt., is a great improvement on results of former years; but it should be noted that at such time as the ore reserves are calculated, small unpayable areas which may be closely associated with payable areas have to be included in the general average, and this has the effect of lowering the average value indicated by the development.

Policy of Exploitation and Milling Programme.

In view of the improved results of development operations, the company announced in September last its decision to proceed with the design of a reduction plant; and in consideration of this improvement in the development having been maintained it has now been decided to erect an "all sliming" reduction plant of an initial capacity of 40,000 tons a month. The principle of the plant will be based on that of the recent additions to the reduction plant at the Springs Mines. This decision has been considered justified by the amount of payable ore which the development up to the end of the year indicated might be available when the payable areas became further opened up by secondary development. It is estimated by the company that the indicated payable tonnage approximates to 1,500,000 tons, carrying an average value of 6½ dwt. over a stoping width of 62 inches. I would point out that the foregoing figures are based largely on reef exposures in the main haulages which are considerable distances apart, and that secondary development of the indicated payable areas may have the effect of augmenting or diminishing, either or both, the tonnage and value of this estimate. It is anticipated that the reduction plant will be completed by about the middle of next year (1924), by which time a considerably further area of the property will have been explored and therefore at that date the above mentioned tonnage should be appreciably increased, as, since the end of the year and up to the time of writing this report, further payable ore of high value has been exposed. The cash position of the company at the end of the year was such that the policy of concentrating on primary and exploratory development operations could be continued as at present until about the end of June. It therefore becomes necessary—in view of the decision to proceed to the milling stage—to provide additional funds, and I am informed that satisfactory arrangements have been made, and that negotiations are proceeding for the raising of the required funds to erect the reduction plant, and to provide for an increased development programme together with any additions to the existing machinery and plant necessary to the commencement of gold production. It is still proposed to confine development operations to the northern section of the property served by the No. 1 or north shaft; therefore, for the time being, no further sinking operations will be carried out at the No. 2 or south shaft. Progress was greatly retarded by the strike at the commencement of the year, otherwise operations within the limitations of the company's policy have been energetically carried out.

Gold in the Free State.

Apropos of the note in a recent issue headed "No Gold at Vrede," Mr. A. R. Sawyer writes from the New Rand property: "Months ago I received a letter from a Frankfort lawyer urging me to rush to Vrede to see a gold discovery. Knowing, as every geologist in this country should know, that the whole of that country is covered with Karroo beds and that there is no payable gold in these beds, I of course did not waste my time on such trash. It hardly required a whole crowd of experts to establish this fact. The statement, however, that there is no gold in the Vrede district appears to me rather sweeping as it is quite possible that the Witwatersrand formation may occur, as they do here (although Vrede is about 70 miles away from where we are boring), beneath the Karroo, and that they may contain payable gold reefs. You are quite at liberty to make use of this letter as you may think fit."

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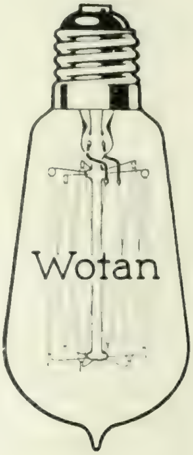

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TOPICS OF THE WEEK.

The Mines' Annual Stock-taking.

With commendable promptitude the annual reports for 1922 of most of the Rand gold mining companies—checked, audited, printed and despatched—are now available, and this week's issue contains therefrom a representative selection. Pride of place is easily held by the "J.C.I." group, which, with the State Mines, New State, Randfontein and Van Ryn Deep furnishes enough interesting matter to fill a whole number. No apology is needed for printing in full Professor Lawn's admirable reviews of the position and prospects of these great mines, as they should be found invaluable for reference purposes as well as of great immediate interest. The effects of the troubles of the early months of 1922 are, of course, visible in all the reports to hand, but it is remarkable how much leeway was made up towards the end of the year. Like the experienced skipper of a mail boat, who always keeps a little in hand wherewith to reach port in time, allowing for unforeseen delays, most of the big mines very nearly made up for the setback of the first three months of the year. Not quite, however, and it will be seen that the Government share of the profit of the State Mines was £737,838, as compared with £896,211 for the previous year. A new and welcome note is struck by Professor Lawn in his concluding tribute to the managements of the different mines of the group for their services during the year. He testifies to their "steadfastness and energy" in every case, and, in view of all the circumstances, it would be difficult to find words better or more aptly chosen. Unfortunately, the picture of well-merited prosperity presented by the Barnato reports is thrown into relief by the sombre outline of the E.R.P.M.'s future limned in its annual report. Since the report was written and printed, matters have not mended, and the "grave concern" mentioned therein must indeed have deepened in the interval. It is entirely fitting and right that the E.R.P.M. report should appear the same week as that of the State Mines, to which it formed a wholly necessary corrective.

The Precious Stones Bill.

The Precious Stones Bill, the second reading of which was agreed to in the House of Assembly on its resumption after the Easter recess on Monday, will arouse greatest interest among the alluvial diggers, chiefly by reason of its attempt to solve the difficulties attending the proclaiming of new areas. This amending measure—the Minister of Mines and Industries prefers to impart to it the dignity of a consolidating measure—proposes to overcome the present objections associated with the "rush" by one of two options. The first is to divide the area into claims and let the prospective diggers draw lots for them, and the second is to allow priority of running on the principle of aquatic events, *i.e.*, by permitting the candidates to dive into the sea of fortune singly at stated intervals, priority of running (or diving) being determined by lottery. Further, every man who desires to participate in a rush or ballot must be in possession of a digger's certificate and be a *bona fide* digger. Most men on the diamond fields are familiar with the present method of proclaiming new ground, and have been witness to the unfortunate disputes, regrettable accidents and keen disappointments attendant thereto, and it is generally conceded that some more modern method is required to meet the unique circumstances. Our contemporary, the *Diamond Fields Advertiser*, which is in a unique position to judge, says: "Whether Mr. Malan's proposals will prove to be adequate to the occasion in the future is a moot question."

In the Assembly this week the second reading of this Bill was taken, which the Minister for Mines described as a consolidating measure, but which contains many novel features. The Minister was very solicitous to explain the provisions evolved for the protection of the rights of the surface owner—generally, of course, a farmer. He is to get nine months to decide whether he is to dispose of the mine, twelve months to raise capital if he decided to work the mine, and fifteen months in which to start the mine. In the case of his default the Government is to be given the power to call for tenders. The Gold Law provision giving the Government Mining Engineer power to hold an inquiry in the case of the closing of a mine on the ground of unpayability is taken over with its sequence empowering the Government to work the mine in case it is decided that it is payable. The Minister dealt with the alternatives to the present system of rushing the claims in the case of a new field. The first is to allocate claims by drawing lots, and the second is to have lots drawn giving priority of running whereby No. 1 would get a minute start of No. 2, and so on, "but," said Mr. Malan, "if it is a small rush I think the existing law may very well stand, and," turning to Sir David Harris he added, "it has stood the test for at least 25 years." Of the alternatives he showed a partiality for the ballot for order of running, but all rushers must be in possession of a digger's certificate. "I don't think it right," he said, "that [illegible] miner any more warrant should go and take a holiday when one of these rushes takes place and have a sporting chance of pegging a claim and take the bread out of the mouths of the diggers." The Bill gives recognition and powers to the Alluvial Diamond Board, makes an effort to systematise mining rights and provides machinery for dealing finally with disputes on diamond diggings. Mr. Malan consented to refer the Bill to the Select Committee dealing with the Gold Law to examine the details, but not to take evidence.

Rand Mining Investments.

Delivering at the School of Oriental Studies, Finsbury Circus, London, by mail week, the last of a series of ten lectures on "The London Money Market," with special reference to the international position, Professor H. S. Foxwell, M.A., F.B.A., said one of the most important events in connection with money market matters was the publication recently by Professor Lehfeldt, of the Rand University, of a return on the average rate of profit earned by the various mining companies. Gold mining and sensational mining were associated in the popular mind with gigantic profits. It was interesting to find that after a prolonged and careful investigation and making all necessary allowances for depreciation, etc., Professor Lehfeldt ascertained, taking a period of 14½ years from June, 1907, to the December, 1921, that the average rate of net profit on all capital sunk by 176 companies existing in 1907 was 4½ per cent. That would be admitted to be a very modest rate for the risks taken, and, as the Professor said, "Not very much higher than that paid by Governments and other first-class borrowers," and as he added, "likely to diminish in the future so far as the Rand is concerned." These figures he thought would tend to sober people's ideas of alleged profiteering which figured so much in popular chatter.

The Truth about The Tin Outlook.

Some hard and unpalatable facts in regard to the "true conditions" of the tin position come to us by this mail. It seems that, after all supply and demand factors have been considered, the chief one remains the aims and objects of the powerful Dutch speculative element, which is really at the back of the present rise. How far this group is prepared to take prices cannot be gauged, but the fact cannot be ignored that whilst these interests only produce between one-quarter and one-fifth of the metal output, they nevertheless manage to hold the rest of the industry to ransom by alternative bull and bear operations to the ultimate injury of both producers and consumers. This is an intolerable position for British Empire producers who, if they cared to put forth a real effort, could speedily put a stop to it. Taking the whole world's output, at least 50 per cent. is in the hands of English companies, mostly controlled from London, whilst as to future supplies looking 10 years ahead, somewhere about 80 per cent. is in English hands. The trouble is that many of the Empire producers find it more profitable to row in with the Dutch speculative element, and to make money out of market manipulations, than to look exclusively after the affairs of their own companies. Hence the matter has been allowed to drift, and no one is sufficiently patriotic or energetic to make an attempt to bring all British producers into line and to establish price and production control. This brings us to the consideration of the whole subject from a much wider angle, and one which was, we are glad to see, dealt with fully in a recent issue of our contemporary, the *Financier*, which urged that the time had arrived when the position of the producing industry should be reviewed from the standpoint of restriction of output and price control, on similar lines to those adopted with regard to the rubber plantation industry. Briefly, the plan suggested is that a joint conference be called of the members of the Nigerian Chamber of Mines and representatives of the Malayan producers, at which a scheme should be formulated for the stabilisation of the output at a price which would at the same time be reasonably remunerative to producers and attractive to consumers and the public generally. It is argued that "this is necessary in order that new schemes of development may be undertaken by producers, and of works extensions by manufacturers, for without some degree of stabilisation the industry can never hope to avoid in future repetitions of the previous violent fluctuations between extreme boom and slump, which has been such a curse to all concerned in it. It is pointed out that, unlike the rubber industry, where the latex is renewable, the tin fields are not inexhaustible, and supplies sold in a period of slump can never be replaced. The producers possess a limited and rapidly diminishing commodity, and it is the height of folly to allow this comparatively rare metal to become the sport of speculators to the disadvantage of its actual owners."

A Straight Talk on The Coal Trade.

Few of our coal mines are better managed or administered than the Tweefontein Colliery, and the overseas shareholders last year were able to profit by a personal visit to this country by the Chairman, Lord Oranmore and Browne. One reads the speech delivered by the chairman at the annual meeting of the company the other day in London with more than ordinary interest; and his brief sketch of conditions in the Transvaal coal industry eminently merits quotation. "I confess," he said, "I did not then anticipate that the effects of the industrial strike in South Africa would have so gravely affected the coal trade of that country, nor did I expect the dislocation of the export trade to be more than a passing phase. Unfortunately for all of us (and I speak as much for the directors as the shareholders), recovery from the unfortunate occurrences in 1922 has taken much longer than was expected, and even at this date restoration to pre-strike prosperity is by no means in sight. At present there are certainly modest profits discernible, but whether they will be maintained remains to be seen. The coal trade of South Africa has had during the last year to contend not only with difficulties directly attributable to the strike. One of its chief troubles has been the competition of Welsh coal in markets where South Africa should not in normal times fear competition in view of its geographical position, and the state of the coal and shipping trade in Great Britain has up to a comparatively recent date been such that ships have been able to take coal and dump it down in Indian and Eastern ports at a lower price than South Africa could produce and transport it. Another contributory factor to the falling off in the export trade has been the high tariff imposed by the South African railways on the transport of coal from the mines to the ports. I readily admit that the Railway Department has recently modified its rates, but unfortunately their action has succeeded—not preceded—the loss of trade, and even now the rates are in excess of pre-war charges. The difference in the rate for export coal at the present time is only slightly higher than before the war, but on bunker coal the rate is no less than 7s. 6d. per ton higher."

The Chairman ended with a piece of plain speaking. "You will no doubt have noticed in the Press," he said, "from time to time the public utterances of the Prime Minister of South Africa emphasising his interest in the development of industrial undertakings in the sub-continent. I would respectfully urge that his interest be manifested in action, and that the charges of the Railway Department of the Union of South Africa be so modified as to enable an industry second only to that of gold mining to earn a return commensurate with the large amount of capital which has been expended upon the development of the coalfields."

Research as An Investment.

One is not quite sure whether to congratulate or commiserate with Dr. Caldecott on the title of his new office, viz., Director of Industries. It will take so much living up to! At any rate, his Department has shown commendable enterprise lately by appointing Mr. E. F. English, M.Sc., to be Chemical Engineer to the Industries Division. Nor has Mr. English taken long to show his metal, for the current issue of the Journal published by the Division contains a brief but eloquent plea from his pen for systematic research as an investment. One or two sentences may be quoted. He writes: "A few new ideas may be stumbled across occassionally, but real progress demands continuously applied effort along systematic lines. It was no hit or miss endeavour, but eight years of hard, solid, highly organised research, which perfected the manufacture of tungsten wire which can be drawn down to four ten thousandths of an inch. Years ago it was sufficient to establish an industry and leave it to take care of itself as long as the balance sheet showed a profit. The greater part of the research work was done in the universities along purely scientific lines; its value cannot be too highly estimated, but work of equal value was neglected. The spirit of industrial research had not grown up. The professor, the industrial chemist, and the plant executive, whose financial support is essential, had not learned to get together."

Again he says: "The Western Electric Company, to quote a peak example of enlightened policy, has over 1,500 technically-trained men spending their whole time on research. The secret of American industrial development lies in the lavish expenditure of money on research. Cast thy bread upon the waters and it will come back sandwiches. But the more bread the more sandwiches; so the more money spent the greater the result."

And finally, Mr English opines: "To most companies in South Africa research on an extended scale is at present impossible, but it is well to remember that competition in the world's markets demands this eventual outlay; research is a paying proposition. At any rate an engineer or chemist "nosing" around for inefficiency, working to cut down losses, and keeping an eye open for improvements will save his salary many times over."

The new Chemical Engineer to the Division of Industries, at any rate, has mastered the art of talking to business men in a language they understand.

Notes & News.

Durban Roodepoort Deep.

The following cable was transmitted to London this week on behalf of the Durban Roodepoort Deep G.M.:—"Negotiations have concluded here under which this company has acquired from the liquidators of Princess Estate and Gold Mining Company, Ltd., on favourable terms an area of about 112 mining claims situate on the western boundary of our property and extending south in one intact block to the boundary of the New Steyn Estate Gold Mines, Ltd. This will have the effect of approximately doubling the life of the mine." The matter is dealt with elsewhere in this issue.

* * *

D.F.A. Exploring Co., Ltd.

We understand that a firm offer cabled from London has been accepted by the board of the Company for the formation of a new English Company to take over five of the Company's mines, together with the plant and equipment, for 400,000 shares at 5s. in the new Company, and that 400,000 5s. shares have been guaranteed for working capital for an option to take up a further 500,000 5s. shares at par. The Company retains two properties, Bonza and Beadle. On Bonza, a mine has been discovered but no washing has been done.

* * *

The Diamond Market.

The *Financial News*, in its diamond market report, states that the market is once again normal. Up to the present year only the finest class of stones has been in request, but since the beginning of the current year there has been an overwhelming demand for secondary goods, which, it has been proved without a doubt, go to America. This allows of the interesting deduction that a new set of purchasers has come forward, namely, those who are climbing the industrial ladder. Whatever the cause may be, adds the paper, the demand exists, and there are no indications of its falling off.

Rhodesia Broken Hill.

At a meeting of the shareholders of the Rhodesia Broken Hill Development Company in London, a few days ago the chairman announced it as the company's intention to issue to shareholders, at par, three shares in five of their registered holdings, which would absorb 399,000 shares, and provide £199,500 sterling additional capital. He added that, with ample funds and the production of [illegible] lead at a reasonable cost, it might be advisable [illegible] at no distant date, to make large additions to the plant.

*

Fuel Engineers' Association.

A new organisation, called the Fuel Engineers' Association, has been formed. Its objects are to introduce specialists for various machinery and equipment applying to preparation, production, mechanical handling, and uses of fuels. Users or intending users of such machinery and equipment who are considering improvements or new projects can obtain reliable information on machinery or equipment of this specialist character, and estimates for the same. Fuel Engineers' Association is in a position to (1) introduce specialists manufacturers and contractors for the particular machinery or equipment required, (2) to consider the special conditions, and prepare definite specifications to suit, and (3) to obtain offers for the supply of the machinery and equipment necessary for the project. Annual subscribers of ten guineas, payable in advance, are entitled to receive periodical information on the particular subject or equipment of interest, likely to be of value to them. Also to have prior attention to enquiries or projects submitted. Fuel Engineers' Association reserves the sole right, through its direction, and without giving any reason, to approve or decline any application for inclusion on its subscription register; or to remove a name therefrom at any time; in the latter event the proportionate amount of the subscription paid will be returned for the unexpired portion of the period.

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The March Output in Detail.

HIGHER DAILY OUTPUT—INCREASE OF QUARTER OF A MILLION—BETTER ALL-ROUND RETURNS.

During the month of March, according to the official returns issued this week, the gold mines of the Rand produced 744,311 oz. of fine gold, or an increase on the month of February of 55,865 oz. The value shows an increase of just under a quarter of a million sterling as compared with the previous month; and it is noted that all the mines with the exception of Brakpan show an increased product. It must be remembered, however, that in March there were 26 working days as against 24 in February, but at the same time there has been a most healthy increase in the daily average output by no less than 4,114 ounces.

The results are as follow:—

	Ounces
Total output for March	761,586
Increase on February	56,616
Witwatersrand output	744,311
Increase on February	55,865
Outside districts output	17,275
Increase on February	751
March value	£3,331,939
Increase on February	£247,695

Individual Returns.

	Ounces.	Increase Ounces	Decrease Ounces
Aurora West	3,483	143	..
Brakpan	24,437	–	1,363
City Deep	39,775	4,635	
Cons. Langlaagte	13,003	502	
Cons. Main Reef	19,205	971	
Crown Mines	69,825	6,809	
Durban Deep	11,356	1,179	
E.R.P.M.	32,295	1,779	
Ferreira Deep	9,269	350	
Geduld Prop.	17,782	1,947	
Geldenhuis Deep	14,281	1,308	
Govt. Areas	61,713	5,172	
Knight Central	7,335	287	
Langlaagte Estate	17,041	1,381	
Luipaardsvlei	4,435	380	
Meyer and Charlton	8,548	177	
Modder B	32,270	1,806	
Modder Deep	23,308	1,691	
Modder East	12,208	2,280	–
New Goch	4,322	556	
New Kleinfontein	11,057	446	
New Modder	53,329	4,547	
New Primrose	4,850	202	
New Unified	2,522	229	
Nourse Mines	15,209	1,409	
Randfontein	49,400	1,750	
Robinson	4,480	291	
Robinson Deep	23,417	1,770	
Rose Deep	13,930	1,488	
Simmer and Jack	13,824	1,774	
Springs Mines	24,463	2,200	
Van Ryn Estate	9,144	431	
Van Ryn Deep	26,930	1,752	
Village Deep	17,829	1,018	
West Rand Cons.	9,938	897	
Witwatersrand	12,055	1,416	
Wit. Deep	13,610	1,740	
Wolhuter	8,220	60	–
Miscellaneous	4,214	435	–

Outside Districts.

	Ounces.	Increase Ounces	Decrease Ounces
Sub Nigel	5,392	322	——
Trans. G.M. Estates	5,127	756	——
Glynn's Lydenburg	1,491	135	–
Miscellaneous	5,265	——	462

Native Labour.

The Witwatersrand Native Labour Association report the numbers of natives employed were:—

	March	February
On gold mines	181,573	182,983
On coal mines	14,710	14,717
Diamond mines	1,273	1,227
Totals	197,556	198,927

The following table gives the monthly totals since the beginning of last year:—

Results for 15 Months.

1922	Output Ounces	Daily average Ounces	Estimated price per oz. £	s.	d.
January, February and March	639,728	——			
April	511,338	17,044	4	12	0
May	629,786	20,315	4	12	0
June	675,697	22,523	4	12	6
July	730,635	23,569	4	12	0
August	752,490	24,597	4	12	0
September	747,089	24,903	4	13	0
October	778,159	25,102	4	12	0
November	764,476	25,483	4	11	0
December	790,712	25,507	4	8	0
1923					
January	764,469	24,660	4	9	0
February	704,970	25,177	4	7	6
March	761,586	29,291	4	7	6

THE MUNICIPALITY OF THE CITY OF EAST LONDON.

Corporation Notice No. 50 of 1923.

CITY ENGINEER'S DEPARTMENT.

FOR SALE

ONE WORTHINGTON-SIMPSON TRIPLE EXPANSION CONDENSING PUMPING ENGINE. Capacity about 600 gallons per minute against a head of 600 feet.

ONE HORIZONTAL DUPLEX COMPOUND WORTHINGTON PUMPING ENGINE. Capacity about 250 gallons per minute against a head of 600 feet.

TWO LOCOMOTIVE TYPE BOILERS. Steam pressure 90lbs. and 100lbs. per sq. inch respectively. Evaporation capacity about 3,000 lbs. of water per hour.

About 10,000 feet of 12in. STEEL PIPE.

About 4,000 feet of 6in. WROUGHT IRON PIPE.

About 10,000 feet of 5in. STEEL PIPE.

Eminently suitable for Irrigation and Waterworks Purposes.

For further particulars apply at the Office of the City Engineer, between the hours of 9 a.m. and 5 p.m.

Sealed Tenders, endorsed "Tenders for Pumps, Boilers and Pipes," to be deposited with the undersigned, at the Town Clerk's Office, not later than 12 noon on Wednesday, the 9th May, 1923.

The highest or any Tender will not necessarily be accepted.

By Order,
ROBERT E. DOWDING,
Town Clerk.

City Hall, East London,
5th April, 1923. 240-17

March Output: Group Returns.

UNION CORPORATION GROUP.

Particulars of the operations of the companies of the group for the month of March, 1923:—

Company.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev.) Total.	Per ton.
Geduld Proprietary		47,000	17,782	£78,563
Modder Deep		43,880	25,308	£102,187
Totals and averages		90,880	43,090	£180,750

Company.	[illegible]	COSTS per ton.	PROFIT (including Sundry Rev.) Total.	
Geduld Proprietary		£48,633	20/8	£29,930
Modder Deep		£38,324	17/6	£63,863
Totals and averages		£86,957	19/2	£93,793

The above results are arrived at by calculating gold at 87s. 6d. per fine ounce.

CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs for the month of March, 1923, of the undermentioned companies in the New Consolidated Gold Fields Group:—

Company.	Stamps Running.	Tube Mills Working.	Tons Crushed.	Gold Declared Fine Ozs.	Total Profit Declared, including Sundry Revenue.
Simmer and Jack	320	7	61,300	13,824	£1,362
Robinson Deep	180	10	73,100	23,417	30,774
Sub Nigel	30	2	8,100	5,392	5,424
Totals	530	19	142,500	42,633	£34,836

Gold in reserve:—Robinson Deep, 2,656 fine ounces; Sub Nigel, 1,880 fine ounces. Total, 4,536 fine ounces.

The revenue derived from gold for the month of March is calculated at the rate of £4 7s. 6d. per fine ounce, less estimated gold realisation and exchange charges of 2s. 6d., or a net figure of £4 5s. per fine ounce.

Simmer and Jack Proprietary Mines, Ltd.—Results for March include 1,499 ounces of fine gold recovered from tube mill plates, which have been replaced by corduroy tables. The loss for the month is due to lower grade and increase in working costs due to special expenditure. It is expected that the major portion of the non-productive underground work which has been proceeding for the last few months will be completed by the end of April, the benefits of which should from then on be increasingly felt.

GLYNN'S LYDENBURG: MARCH OUTPUT.

The following are the results of the operations of this company for the month of March, 1923: Tons milled, 4,250; yielding 1,491 fine oz.; estimated value of month's output, £6,296; estimated profit for month, £420. Note: The above figures are exclusive of expenditure for the month upon shaft sinking, special development and capital expenditure amounting to £2,289. The gold output for the month is valued at £4 4s. 9d. per fine oz. net, after allowing for exchange and realisation charges.

GENERAL MINING AND FINANCE CORPORATION.

The March operations of the producing mines of the group were as follows:—

Company.	Tons Crushed.	Total Cost.	Cost per ton.	Total Revenue.	Profit.
Aurora West	13,200	£12,830	19·44	£14,849	£2,019
Meyer & Charlton	16,100	16,452	20·44	37,029	20,577
New Goch	18,000	17,606	19·56	18,485	879
Van Ryn Estate	34,080	33,029	19·38	39,496	6,467
West Rand Con.	36,000	40,511	22·51	42,562	2,051
	117,380	£120,428	20·52	£151,421	£31,993

In calculating the revenue gold has been taken at a value of 87s. 6d. per fine ounce, less estimated realisation charges.

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of March, 1923.—

Mine.	Tons Crushed.	Revenue from Gold. £	Total Working Costs. £
Consolidated Langlaagte	46,000	56,887	47,638
Government G. M. Areas	145,000	269,996	132,827
Langlaagte Estate	51,000	74,555	55,376
New Primrose	21,500	21,217	19,059
New Unified	12,500	11,033	10,266
Randfontein Central	175,500	216,125	182,917
Van Ryn Deep	57,400	117,818	61,546
Witwatersrand	50,250	52,739	42,643
Totals and average	559,150	820,370	552,272
February totals ...	520,400	766,113	524,154

Mine.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue £
Consolidated Langlaagte	20·712	9,505
Government G.M. Areas	18·320	137,889
Langlaagte Estate ...	21·716	19,494
New Primrose	17·729	2,304
New Unified	16·425	818
Randfontein Central	20·845	34,419
Van Ryn Deep	21·445	56,981
Witwatersrand	16·972	11,542
Total and average	19·753	£272,952
February totals	20·144	£246,850

Note.—The above results are arrived at by calculating the gold at £4 7s. 6d. per fine ounce.

TRANSVAAL SILVERS.

The output of this company for March totalled 141 long tons of lead bullion, containing 44,334 ounces of fine silver, representing a total value, based on the latest quotations for the metals, of approximately £17,984.

TRANSVAAL GOLD MINING ESTATES.

The following are the particulars of the output for the month of March, 1923:—Central Mines: Tons crushed, 11,100; yielding, 3,380 fine ounces. Elandsdrift Mine: Tons crushed, 1,850; yielding, 1,038 fine ounces. Vaalhoek Mine: Tons crushed, 1,950; yielding, 709 fine ounces. Estimated value of month's output, £21,731. Estimated loss for month: £2,514.

Note.—Tonnage and working costs were again adversely influenced by effects of recent floods.

The gold output for the month is valued at £4 4s. 9d. per fine ounce net, after allowing for exchange and realisation charges.

The Week in the Sharemarket.

GOLD SHARES DISAPPOINTING—SOME ERUPTIONS—DIAMONDS QUIET—EASIER MONEY.

The promise of better things held out before the Easter holidays has not been fulfilled. The Market has become ragged, and in the absence of public buying, and with no support from the Houses, prices have nearly all come back. Corner House Stocks have been prominnt in the decline, and the break in the price of all of them, one after another, has caused considerable nervousness in the Market. East Rands and Main Reefs have been very weak, also Crown Mines, Modder B, and Nourse Mines. Durban Deeps have been a happy exception and have improved substantially in price since the announcement of the acquisition of their new ground. Crown Mines have been heavily sold on the report circulated in the Market, and eminating from a mining man recently returned from oversea, that the shares were very much over-valued at to-day's figure. Nothing has, however, been revealed to lend weight to this opinion, and confidence may be expected to recover sharply. The position of the Company, to be disclosed to shareholders at the approaching meeting, will be eminently satisfactory. Barnato stocks have been fairly steady, and the same may be said regarding the Anglo-American group. However, the nervousness produced by the decline in Corner House shares has naturally spread. Simmer and Jacks have fluctuated considerably. Rumours are about that there is considerable flooding of the mine from an adjacent property, but no statement has so far come from the House. Transvaal Silvers are said to have again picked up the lode, and the shares have hardened in price. Diamonds, after a little activity, have mostly dipped in price, but the decline is not serious, and will be overtaken with the first turn of the market. Advices regarding the sale of gems are still optimistic. Investment stocks and loans remain entirely normal. There has been the usual quiet business, and Reserve Banks improved at one time to £141 buyers, after the announcement of the 6 per cent. dividend.

The general *malaise* evident in the Market has been chiefly brought about by the liquidation of tired bull accounts. Mail advices from London dwell on the sluggish Kaffir Market, and while in other quarters considerable activity prevails, little attention has been paid to South Africans. In all probability, however, interest will move to this sector very shortly. Evidences of the abundance of money for investment and speculation continue to arrive.

	Fri. 6th.	Sat. 7th.	Mon. 9th.	Tues. 10th.	Wed. 11th.	Thur. 12th.
Anglo-Amer. Corp.	26 6	26 6*	26 7*	26 6	26 6	26 4½
Apex Mines	6 0*	6 0*	6 0*	6 0*	6 0*	6 0*
Brakpan Mines	69 3*	70 3	70 0	71 0	70 0	70 3
Brick and Potteries.	2 6*	2 6*	—	2 6*		—
Bushveld Tins	0 5*	—	0 3*	0 3*	0 3*	0 4*
Cinderella Cons.	3 9	—		4 0†	4 0†	3 9†
City and Subs.	2 10½	3 0†			2 10*	3 0†
City Deeps	49 6	49 0*	49 0*	49 0	48 6*	48 6
Clydesdale Colls.	—	—	17 6†	17 6†		
Con. Diamonds	25 4½	25 4*	25 10½	25 6	25 9	25 0
Con. Langlaagtes	13 0	13 0*	13 0*	13 0	13 0*	13 0*
Con. Main Reefs	10 3*	10 6	10 0*	9 9	9 0	8 6
Coronation Colls.	—	—		27 6†		24 6†
Do. Freeholds	—	0 8*	—	1 0†	—	0 8*
Do. Syndicates	7 6	7 4*	7 3*	7 0	7 0	7 0*
Crown Diamonds	6 9	6 9*	6 10	6 10	6 11	6 10*
Crown Mines	56 3	55 5	55 9	54 9	54 0	53 0
Daggafontein Mines.	3 4*	3 4*	3 4	3 4	3 3	3 4†
East Rand Coals	1 4*	1 4*	1 4*	1 4*	1 5	1 4*
East Rand Deeps	1 0*	0 8*	0 8*	0 8*	0 8*	0 8*
East Rand Minings	—	9 6*	9 6*	10 6†	9 6*	
East Rand Props.	7 6	7 0*	7 1½	5 3*	5 9	6 0*
Eastern Golds	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
Ferreira Deeps	—	—				8 0†
Frank Smith Dmds.	4 2	4 3*	4 3*	4 4	4 3*	4 1*
Geduld Props.	65 6	65 0	64 9	64 6*	64 0*	64 0*
Glynn's Lydenburgs.	—	13 6*	13 6*	13 6*	13 0*	13 9
Govt. Areas	108 0	108 0*	109 0	108 0	108 6	108 3*
Hume Pipes	8 0*	8 0*	8 0*	7 6*	7 6*	7 6*
Knight Centrals	5 2*	5 2*	5 2*	5 2*	5 2*	5 2*
Lace Props.	9 0*	9 0*	9 0*	9 0*	8 7*	8 6*
Langlaagte Est.	19 6*	19 0*	19 6	19 3	19 9	19 0*
Leeuwpoort Tins	3 6*	3 9*	3 9*	3 9*	3 6	3 6
Luipaardsvlei Est.				4 0†	3 0*	
Lydenburg Farms	3 0*	3 0*	3 0*	3 0*	3 1*	3 0*
Meyer and Charltons					—	67 6*
Middelvlei Est.	1 3*		1 3*	1 3		2 0†
Modder B.'s	25 0*	24 9*	24 9*	24 0	24 3	23 6
Modder Deeps	43 7*	43 9*	43 9*	44 0	43 6	43 6*
Modder Easts	8 0	7 10*	7 9*	7 9	7 6	7 6
Natal Navig. Colls.	27 3†			26 0*	27 0	
National Banks					180 0	
New Eland Dmds.	45 3*	48 6	49 9	50 0	51 6	51 9*
New Era Cons.	7 0*	7 0*	7 0*	7 0	6 9*	6 9*
New Geduld Deeps	2 0*					
New Gedulds	2 0*					
New Kleinfonteins	5 6*	5 6	5 6*	5 6	6 0†	
New Modders	78 9*	79 0	79 6	79 0*	78 9*	78 6
New Primrose	3 6*					
New Unifieds	2 0*					
New State Areas	39 3*	39 6	39 0*		39 6	38 3
Nigels	8 6*			9 3	9 3	
Nourse Mines	15 6*	15 7½	15 7	15 3	14 9	14 6
Pretoria Cements	42 9*	42 9	42 6*	42 6*	41 6*	41 6*
Rand Collieries	1 6*	1 6	1 6*			1 2*
Rand Nucleus	0 10*				0 9*	
Randftn. Central	14 9*	15 0	14 9	14 9	14 9*	
Randftn. Estates	23 3	23 3	23 1½	22 9	22 6	22 4½
Rouxville Diamonds	1 3	1 3*	1 6†	1 3*	1 3*	1 3*
Roberts Victors	9 0*	10 0†	8 9*	8 9*	10 0†	9 0
Robinson Deep A	32 6	32 4*	32 0	31 6*	31 6*	32 3
Robinson Deep B	12 1½	12 0*	12 0*	12 0		11 3*
Roobergs		3 6*	3 0*	3 0*	3 0*	3 0*
Ryan Nigels					4 0†	
Shebas	3 6	3 9	3 9		3 6*	
Simmer and Jacks	3 1	3 3	3 3	3 2*	2 9	3 1½
S.A. Lands	5 9†	5 5*	5 7	5 4*	5 6	5 7
S.A. Reserve Bank	£138½		£137½*	£138	£140	£141†
Springs Mines	49 0*	49 0	49 6	48 9	48 3	48 9
Sub-Nigels	10 0	10 0	9 9*	9 7*	9 6	9 6
S.A. Alkali	15 9*	15 9	15 6*	15 6*	16 0†	15 3*
S.A. Townships	9 6*	10 0*	10 0*	10 6	10 9	11 9
Trans. G.M. Estates	8 6*	8 6*	8 6*	8 3*	8 3*	8 3*
Transvaal Silvers	13 9	13 6*	13 6*	13 0*	13 3*	14 0
Tudors		0 3*		0 3*	0 3*	0 3*
Union 5 per cent	£104	£103½*	£104*	£104¼	£100½*	£104*
Van Dyk	1 6†	1 6†	1 0*	1 6†	1 6†	1 6†
Van Ryn Deeps	70 0*	70 6	70 0*	70 0*	70 0*	69 6
Van Ryn Estates			16 0†			
Village Deeps	13 3*	13 4*	13 3*	12 9*	12 0*	11 10½
West Springs	19 6	19 3	19 0	19 7½	19 7½	19 1½
West Rand Cons.	7 0†	—	5 0*	5 0*		
West Rand Estates	3 6*	4 0†	4 0†	4 0†	3 6*	4 0†
Witbank Collieries	30 6*	—	30 9*		31 0†	30 9*
Witwatersrands	—	15 6†	15 6†	15 6†	15 0†	15 6†
Witwatersrand Deeps	16 6	17 0	17 3	17 0	17 0	16 10½
Zaaiplaats Tins	4 1	4 0*	4 0*		3 6	3 3

*** Buyers. † Sellers.**

Bwana M'Kubwa Meeting.

Mr. Edmund Davis's speech at the meeting of this company, in mail week, makes it clear that the prospects of developing a big and paying proposition are exceedingly bright. There are already 7,000,000 tons of 4 per cent. copper ore proved on the property, and it is stated on expert authority that satisfactory profits can be earned with the price of the metal at only £60 per ton. To-day it is in the neighbourhood of £74. The arrangement with the Minerals Separation Co. is one that should be of mutual benefit. The idea is that eventually they will put up a plant capable of treating 1,000 tons per day. A pilot plant has already been shipped, and as soon as the trial runs have been made the first unit to treat 250 tons of ore per day will be ordered. This plant should be running by the end of next year. Mr. Davis is to be congratulated upon the satisfactory arrangements he has made with the railways for cheap transport, and he well deserved the thanks that were cordially given him at the meeting for having brought Bwana M'Kuba to its present very satisfactory position.

ENGINEERING SECTION.

The Union Steel Corporation's Works.

HISTORY AND OFFICIAL DESCRIPTION BY THE MANAGER.

"The Works of the Union Steel Corporation of South Africa" was the title of a paper read before the S.A. Institution of Engineers at their monthly meeting this week by Mr. G. Robson, M.I.Mech.E. (Member), Manager of the Union Steel Corporation.

In dealing with the history of the Corporation, he said: Many of you are no doubt well acquainted with the early history of the endeavours to found an iron and steel industry in South Africa for the exploitation of the native ore bodies distributed throughout the country. The deposits were examined by experts and unfavourably reported upon from the point of view of the establishment of the industry on a large scale. The Government thereupon decided to offer to public tender the large accumulation of scrap iron and steel lying at Pretoria and other railway depots, a condition of purchase being that the successful tenderer should erect a plant for the production of steel from scrap, and allocate a certain portion of profits made to experimental work on native ores, with the object of proving their suitability for the production of iron.

A number of tenderers entered the field, and after lengthy negotiations the Union Steel Corporation was formed to take over the contract from the successful tenderer and carry out its terms. Thus the foundation of the Corporation's business was laid, and with it—I may even venture to say—the foundation of the iron and steel industry in South Africa. The enterprise was one fraught with great risks and many difficulties, and demanded the greatest courage on the part of its promoters, most prominent amongst whom were Mr. Isaac Lewis, the present Chairman, and the late Senator Samuel Marks, who have done so much to foster industries in this country, and the late Mr. Isaac Butler, an ironmaster, recognised as one of the cleverest men in the iron and steel trade in Europe. Mr. Butler was for a time managing director, in which capacity his great experience proved invaluable to the Corporation. These gentlemen, undeterred by pessimistic reports, proceeded with characteristic energy to establish the works, to surmount the difficulties attendant thereon, and prove their faith in its ultimate success.

It is interesting to note that the sons of these pioneers, Major Aubrey Butler, Messrs. Louis and Theodore Marks, and Mr. G. Roy Lewis, the Managing Director, are now taking a most active interest in the affairs of the Corporation, and in promoting its welfare.

The lecturer proceeded to deal with the works, the construction of which, he stated, was commenced in 1912, and during the first year of operations, the number of employees was: White 84, native 166, making a total of 250; whilst to-day, the employees are 215 white and 585 natives—making 800 in all.

The works, the total area of which is approximately 50 acres, are situated on the banks of the Vaal River, Vereeniging, and the sidings are connected to the main line; the railway station being about three-quarters of a mile distant. The large electric power station of the Victoria Falls and Transvaal Power Company, Limited, is situated within three to four hundred yards of the works, from which source the Corporation obtains the electric power necessary for the running of the whole plant.

Adjacent to the steel works are the works of the Vereeniging Brick and Tile Company, Limited, by whom the fireclay, silica and magnesite bricks required for the steel furnaces are manufactured, whilst the coal necessary for the gas producing plants is supplied from the collieries of the Vereeniging Estates, Limited, which are situated in the district. Continuing, Mr. Robson illustrated and described many of the processes of manufacture carried out by the Corporation and mentioned that during the Great War they supplied South Africa with steel sections and steel castings which at that period it was impossible to import.

Letters to the Editor.

NATIVE MINE AMBULANCE COMPETITIONS: CENTRAL DISTRICT.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—The Second Annual District Competitions for Native Mine Ambulance Teams in the Central District (Nourse Mines to Consolidated Langlaagte Mines, inclusive) will be held, by the courtesy of the Directors and Manager (A. E. Payne, Esq.), at the Consolidated Langlaagte Mines, Ltd., on Sunday, the 15th inst.

The Competition will commence at 9.0. a.m. sharp, and all teams, each in charge of a responsible white official, must be present at the mine office not later than 8.45 a.m. The nearest railway station to the mine is Langlaagte (about 2 miles). A 'bus is advertised to leave Christie's (Chemists) Corner, Main Road, Fordsburg, at 9.15 a.m. for the mine. The Rules and Conditions of the Competition have been circulated, and officials concerned in the training of teams, must see that the members of their teams are conversant with the essential items. Special attention is drawn to Rules 2 and 13 (a water bottle should also be part of the equipment). The members of the winning and second teams will receive silver and bronze medals respectively presented by the Prevention of Accidents Committee of the Rand Mutual Assurance Co., the winning team also receiving a sheep presented by the Society.

I am, etc.,

FRED ROWLAND,
Secretary.

DESIGNS —— DRAWINGS —— TRACINGS

Working Drawings made from clients' sketches and instructions: mechanical and structural work handled for inspection or supervision; drawings prepared for patent specification.

J. E. PARKER, M.I.Mech.E., M.A.I.M.E.,
'Phone 1760. Box 559, Pretoria.

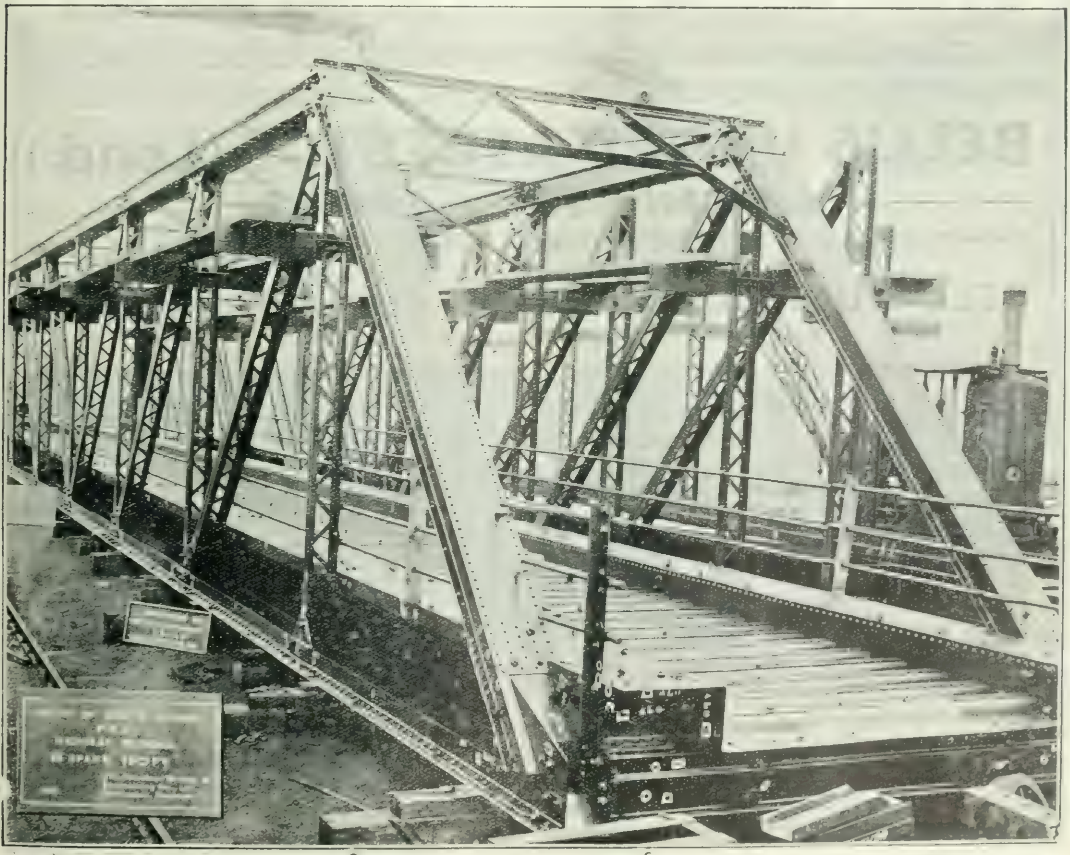
THE LIFE OF CONCRETE SEWERS.

First cost is not always an accurate criterion of the cheapness or otherwise of any commodity. Cheap articles which require frequent renewal or continual expenditure to keep in repair generally prove to be false economy, and ultimately more expensive than a first-class article which, although dearer to buy in the first instance, necessitates but little or no expenditure during a longer period of usefulness. Since writing the above note we have received an account of the experience of Mr. J. W. Tomlinson, A.M.Inst.C.E., Borough Surveyor, of Luton, as to the relative merits of iron and concrete pipes from the point of view of longevity and maintenance costs. The instance is of more particular interest because in a concrete sewer just completed in that town a glazed brick lining was put in at the bottom for fear of any disintegration of the concrete which might be caused by the acids in the sewage. Last month the Surveyor inspected a concrete sewage pipe, one mile long, through which sewage is pumped with a 75-ft. head, laid eleven years ago, and through which 3,000,000 gallons of sewage are pumped every twenty-four hours. To inspect the concrete pipe it was necessary to pass through an iron pipe laid at the same time, and it was found that although the iron pipe was badly pitted and rough, the concrete pipes were quite smooth, except for the marks of the shuttering used when they were built. The concrete surfaces were tested with a chisel, and it was found that there was no disintegration whatever. The Surveyor has since stated that had he made this inspection before laying the pipe just completed, he would have used concrete throughout and dispensed with the glazed bricks. These two instances prove that cheapness in first cost is not the only claim which can be put forward for concrete sewage pipes. When a low initial cost is combined with long life and no maintenance costs whatever it would seem that the ideal has been reached.

A NEW PIPE WRENCH.

Readers will have noticed the advertisement appearing in this journal of the new "Little Giant" pipe wrench manufactured by the Greenfield Tap and Die Corporation, Greenfield, Mass., U.S.A. There are seven good reasons stated for using this wrench, and pamphlets describing it are in the possession of several of the leading local merchants who have imported this wrench. These wrenches have already been sold to a number of local consumers and the reports received are extremely satisfactory, so that this wrench has met with immediate success here, the same as it has done in other parts of the world. One advantage of this wrench is that on account of the end opening jaws the "Little Giant" wrench can be thrust straight on to a pipe like a pair of pliers, and can be used in places which are beyond the reach of an ordinary wrench. The arrangement of the jaw is such that it can be engaged at will with two or four sets of teeth and these extra sets of teeth mean a much longer life than for the ordinary wrench. The "Little Giant" wrench is drop forged and heat treated throughout. These "Little Giant" wrenches are obtainable locally in 8, 10, 14 and 18 in., and supplies of 24 in. are now on the way.

NEW ROAD BRIDGE OVER THE VAAL AT VEREENIGING, OPENED THIS WEEK.



The bridge consists of 15 spans, each of 150 feet. The bridge was built by the Cleveland Bridge and Engineering Co., Ltd., Darlington, England, whose agents in South Africa are A. & S. Ash Brothers.

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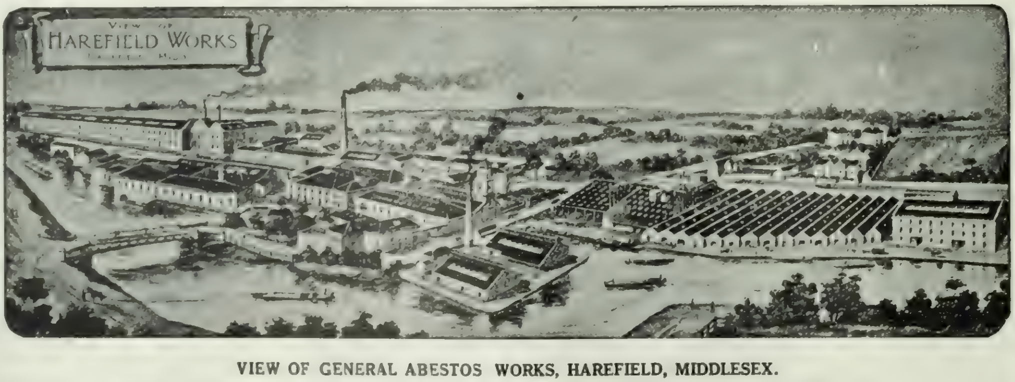


VIEW OF GENERAL ABESTOS WORKS, HAREFIELD, MIDDLESEX.

"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.

Over 170 million square feet "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromesition Factories and the like.—Enquiries invited.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET—IRON AND STEEL—CONDITIONS HERE AND ELSEWHERE—TIMBER AND BUILDING MATERIALS—TENDERS RECENTLY ADOPTED BY JOHANNESBURG TOWN COUNCIL—METAL MARKET QUOTATIONS.

General.

The week following the Witwatersrand Agricultural Show and the Easter holidays has been very quiet in mining material circles. In a chat this week with one of Johannesburg's pioneers in the commercial world, and who takes, as he has taken for years, a leading part in the city's commercial activities, things were said to be undoubtedly very quiet financially just now, due in a large measure, he thought, to the general tightness of money. This expert in the commercial world said he had never experienced such difficulty in negotiating business with merchants as at the present time. Years ago, he said, he had found no difficulty in putting through business which to-day, owing to the stringency of money, he found impossible. From opinions gathered from the commercial community it must be assumed that the country generally is suffering from financial stringency, caused in part, at any rate, by the amounts of liquid cash diverted by our big banks to the Reserve Bank, so by law provided, and is suffering on that account. At any rate, to-day, money is very tight, and business is thereby retarded. As regards the European situation, it is very difficult to see where we are, and merchants are naturally reluctant to launch out until they get a clearer view of things. This notwithstanding it is generally felt in commercial circles that it is merely a question of creating greater confidence to enable our financial institutions to spread themselves, more in the future than they have done in the immediate past. But until money becomes more plentiful, it seems, in the opinion of commercial circles, that business will not receive that uplift which the community has not only been expecting but which is fully justified by our present and potential conditions. A magnate in the commercial world said this week that nothing could give us relief quicker than the question between France and Germany being satisfactorily settled on a basis which would allow Germany to get ready to pay her debts, which would in its turn allow others to get along. Until some such settlement is come to this keen observer saw no hope of a radical change for the better in the Union's commercial activities. He thought that France's present policy was fraught with disastrous consequences not only to herself but also to her Allies. It seems now, however, clear that pourparlars are under way to dig into the present chaotic Germanic conditions, and although the Teutonic proposal of a substantial sum to France (leaving out other creditors) may not seem at present alluring, possibly something in that direction which, while saving Germany's face may still recoup other countries in some measure (full measure is now acknowledged by the world to be absolutely impossible) for their losses and sacrifices.

The keynote this week, as it has been for many months past, is undoubtedly the stringency in money. We have ascertained in leading commercial circles that business which, say, two years ago, was easy of achievement, is to-day, owing to the absence of money facilities, very difficult to put through.

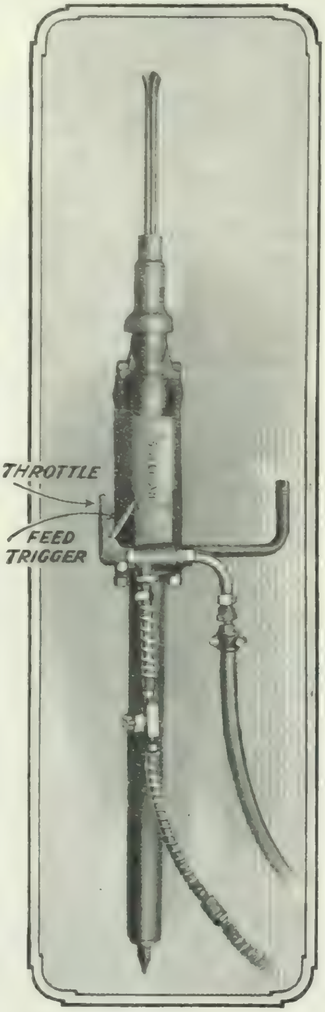
Engineering shops have, on the whole, been better employed during the past fortnight; orders are coming in more freely, and they appear to be busier now than previously.

Iron and Steel.

Business at the moment is very quiet and, according to all reports, is much worse now than at this period last month. An iron and steel magnate, called upon this week, said he had received a cable that iron and steel materials had further advanced to the basic price of £10 a ton, f.o.b., which increase means, he said, since the end of December a rise in England of 35s. in plates and 42s. in angles. Advices by this mail, he said, stated that not only had prices increased, but considerable difficulty is being experienced in placing orders with manufacturers, the latter in turn having the greatest difficulty in purchasing the raw materials, chiefly coke. This authority thought that the labour question in Britain had now been adjusted. It had, however, put back business very considerably.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s., cheques plates, 27s. 100; lb.; imported flats, ½ x 3-16, ⅝ x ⅛, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ¼, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. - Ingot tin (Lamb and Flag), 2s. lb.; phosphor tin, 2s 9d. lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 1⅛; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ½ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 32s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in.,

SULLIVAN WATER STOPERS



Lay the dust
Cut the Rock
Don't wet the men

In this new Sullivan Water Stoper, " DT-421," the water is led through a tube from the rear of the cylinder into the hollow drill steel, and is discharged **only** at the back of the hole, where it prevents dust from forming.

There is no leakage, and on vertical holes the water from the hole falls within a 12-inch circle at the foot of the drill.

" DT-421 " Stopers are top-notchers in footage, first because of the water jet; second because they are SELF-ROTATING, and third because the one-hand, feed-trigger control enables the feed to be stopped instantly or regulated to any desired speed, depending on the ground conditions.

The Sullivan " DT-421 " is the only stoper in actual every-day use in which these valuable features are combined. **Don't forget it.**

Water jet, **plus** self-rotation, **plus** instant feed control —only in the Sullivan " DT-421 " Stoper.

One mining company has over 200 DT-421s.

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5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 7s. 6d. to 39s. 9d. each; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Britain: Mail Advices: Iron and Steel.

The difficult trading conditions which have existed recently have resulted in a considerable falling off in new business. Appearances indicate that orders, which in the aggregate must amount to a large tonnage, are being held back until the situation becomes clearer. The recent price advances on practically all steel material were probably as much the outcome of the cautious policy which the manufacturers have been pursuing as the desire to take advantage of the fortunate position in which they found themselves as a result of the chaotic conditions on the Continent. The majority of the British works are comfortably off for orders until May, and are declining to book far ahead, and in some cases are quoting prices which are acting as a brake upon reckless buying. Overseas buyers are showing less anxiety to cover their requirements. The factors which operate against stable business are the increasing scarcity of fuel, which, in turn, is hindering the expansion of pig iron output, and also the difficulty experienced by the re-rollers in securing semi-finished materials. Negotiations are proceeding between the ironmasters and the coke producers with the object of arriving at a scheme by which the requirements of British industry will be satisfied before the export demand is met.

Repudiation of Contracts on the Continent.

The Committee of Management of the London Iron and Steel Exchange met last month, and considered instances in which Continental sellers of iron and steel have sought to evade the fulfilment of their contracts. The Committee declined to lay down precise definitions of what constituted *force majeure* such as would be applicable at all times and in all places, being of opinion that cases must be judged on their merits. It was agreed, however, that the existing conditions on the Continent were not sufficient ground for pleading *force majeure* as a justification for cancellation of contracts, although delays in deliveries might be occasioned. Since the French occupied the Rhur, a complete reversal of the normal conditions of the European steel industry has occurred, and instead of Britain drawing supplies of semi-finished material from France, Belgium, Germany and Luxemburg, all these countries are eagerly trying to buy from Great Britain. In addition, other Continental countries which habitually buy their iron and steel requirements from Germany are now forced to send their enquiries to British manufacturers. Unfortunately, most of these potential orders fail to become actualities, as the very fact that Continental supplies of raw semi-finished materials are unobtainable prevents the British factories from working at their full capacity. A further circumstance which checks the expansion of output for the Continent (says the *Ironmonger* in mail week) is that the higher price which the Continent is willing to pay for British fuel is creating something in the nature of a shortage in Britain. Palmer's iron and steel works at Jarrow have now resumed operations after being closed for over two years. Two furnaces have been put in blast, and 600 men have started work. Palmer's example has also been followed by the Codnor Park Ironworks of the Batherley Co., Derbyshire. Pease and Partners have restarted an additional hematite furnace at their Normanby Ironworks. Samuelson and Sons are putting into blast a furnace at their Newport Ironworks, Middlesborough, for the production of basic iron.

Quotations.

Staffordshire common bars 14s., and galvanised corrugated sheets 23s. per cwt. Tin plates: Basis price, 20 by 14, 25s. to 25s. 6d. f.o.r.

Wire, Nails and Sheets.

Galvanised wire in 1 cwt. lots, fencing wire, 1 to 8 gauge, 21s. per cwt.; tenacity wire in 7 [illegible] rings, 8 gauge basis, 28s. 6d. per cwt.; strand wire in ½ cwt. coils, 7 ply by No. 4 basis, 27s. 6d. per cwt.; barbed wire in ½ cwt. reels, 23s. 6d. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 4 cwt. lots, 19s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 23s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 25s. per cwt.; black, 19s. per cwt. Bolts and nuts, 50s. per cent. discount.

Semi-finished Material.

Billets are quoted at £8 15s. to £8 17s. 6d. The price of tinplate bars has been advanced to £8 16s.

Finished Materials.

Prices have advanced. Steel rounds, £11 15s. to £14 per ton. The Japanese demand for black plates is still unsatisfied, despite the heavy tonnage booked. August-September delivery, £20 10s., is required.

Tinplates.

The Welsh manufacturers have advanced their prices for 20 by 14 basis, f.o.r. Swansea, by 1s. 6d., viz., from 21s. to 22s. 6d. Tinplate bars have advanced from £8 6s. to £8 16s. Germany is reported in the market as a large buyer.

Galvanised Sheets.

£19 to £19 10s. for 24 gauge corrugated sheets in bundles. Most of the works are well booked, and apparently able to maintain their quotations. Steel hoops, £16 5s. per ton for best steel and £13 5s. for soft steel. Iron hoops, £15 per ton. In sectional steel £11 to £11 10s. is now being asked. Steel plates in the midlands are generally quoted at £11 per ton.

Cleveland Pig Iron.

No. 3, 125s. No. 1 is very scarce at 130s. No. 4 foundry, 122s. 6d.; No. 4 forge, 117s. 6d., all f.o.b. Steel billets, soft, £9 10s.; hard, £10 10s. Bars and angles, £9 10s.; tees, £10 10s.; joints and channels, £9 15s.; sheets, £13 2s.; plates (ship), £10, boiler £11; rails, £9 10s. Ship plates, £9 15s. per ton for [illegible] in. and up; forging blooms and slabs, £10 15s.; Staybars, £12 10s. per ton. Export prices of boiler plates, which have not been decontrolled, are fixed at £12 10s. per ton.

Pig Iron.

Cleveland. Foundry lot, 130s.; No. 3, 125s.; No. 4 forge, 117s. 6d. Hematite, mixed numbers, 120s.; No. 1 G.M.B., 120s.; No. 3, 115s.; hematite, f.o.r. steelworks, 120s.

Finished Iron and Steel.

Iron: Crown bars, £12; best bars, £12 10s.

Hematite Iron.

Ordinary mixed numbers, 120s., May-June delivery. Several hematite furnaces have recently been put in blast in Barrow, Aynesome and Normanby.

Fuel.—Coke continues in short supply, and prices are higher. Medium qualities are now 38s. 6d. per ton, and some brands are marked at 40s., both delivered at the furnaces.

Heavy rails are quoted at £9 10s. per ton, light rails £11 per ton, and billets £10 per ton.

Pig Iron.

There is a strong demand for most qualities of pig iron for early delivery, but except for a few second-hand parcels no iron is available. No business in Continental pig iron has been reported. Basic iron has been inquired for, but there is little offering, and up to £6 has been asked. Midland foundry iron has been sold at [illegible] price, and Cleveland No. 3 is nominally [illegible]

Canada.

The British Empire Steel Corporation, which recently closed down their iron mines at Wabana, Newfoundland, throwing out of employment 2,000 men, have now re-opened. The closing down of the mines was mainly due to the uncertainty of the European situation and lack of assurance as to the continuity of ore shipments.

France.

The French foundry industry is organising an exhibition of foundry work and appliances to be held at Paris during the first fortnight in September. Great Britain and America are making arrangements to participate therein.

The output of pig iron in France in January was [illegible] tons, against 315,228 tons in December, and that of steel [illegible] tons, as against [illegible] tons. On February 1 there were in France 90 furnaces in blast, 79 ready to be blown in, and 59 in course of construction or under repair. During January the furnaces were damped down because of the scarcity of coke. The price of coke, which was 97 francs for January, was 108 francs for March.

United States: Pig Iron.

The production of pig iron in February was 2,994,187 tons, which shows an increase in the rate of production of about 40,000,000 tons per annum, or about 90 per cent. of capacity. Prices show moderate advances. No. 2 foundry is quoted at $25 to $26 Western Pennsylvania, $28.77 to $29.50 Eastern Pennsylvania, and $29.50 to $30 Buffalo, which quotations are in close competition with imported iron.

Semi-finished material.—Sheet bars $45 and billets $42 to $45. The price of steel strip has been advanced to $3 net ton to $3.65 per 100 lb. Plates, shapes and bars $2.50. An advance in common labour in the steel trade is expected this month, amounting possibly to 10 per cent.

Second-hand Machinery.

The second-hand machinery market is still short of second-hand stamps and some of the mines, especially the [illegible], which have continuously purchased second-hand, are very reluctant to buy new when second-hand have been the purchase for years. An order from Natal has just been placed by a prominent dealer for a very large crusher. There are one or two inquiries for mounted portable boilers, which are very scarce in the country. There is still quite good business being done in second-hand plates as well as new, which is always wanted. Second-hand trucks are very scarce and so are rails. There is also a scarcity of big engines, as two or three inquiries for second-hand engines in the town this week could not be met. A dealer when buying a large-sized engine immediately notifies the firm, so that the market dealer is short of what could have been utilised very satisfactorily in place of new. Generally, said a well-known dealer this week, business is not too good.

Timber and Building Materials.

Business in the timber trade during the past week has been quite good. According to a leading merchant trading was last month quiet, but shows a slight improvement this month. Prices overseas for timber are still advancing and are bound within a short time to affect prices here.

Building operations are fairly good, and big contracts are yet on hand, but moderate jobs are scarce. Prices of bricks and other building materials are unaltered.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; flooring boards, 3½d.; flooring, 6d. to 6½d.; ceilings, 4d. to 4½d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron 8¼d. to 8¾d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1¼ in., 11d.; 2 in., 1s. at coast. Japanese oak, 11½d. at coast. West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d. to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft. 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 27s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5, and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 7s. 6d.; 15 in., 9s.; 18 in., 9s.; dry red oxide, 14s. per 100 lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3 ply.

Second-hand Iron and Timber Yards.

These report little or no improvement in business lately, but future prospects are more encouraging. Stocks are not too plentiful. Prices for second-hand iron are 7d., and for timber 1s. 2d.

Electrical Goods.

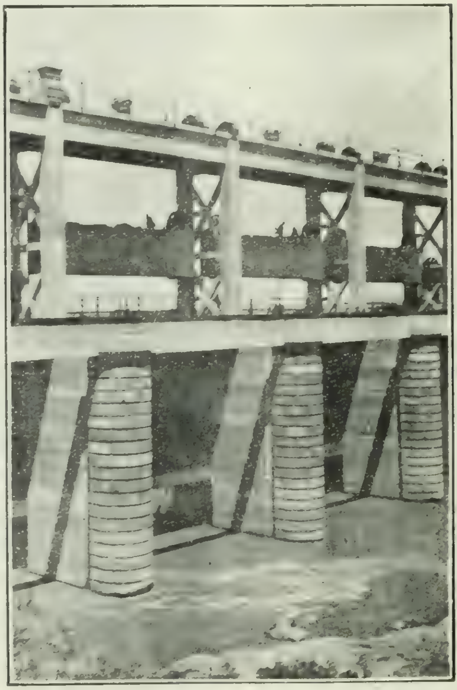
Dealers have done a little more business during the past week or two and things seem to be looking up in this section. Prices locally remain much about the same and overseas quotations are not expected to affect them for some time to come.

Tenders for Material recently adopted by the Johannesburg Town Council.—Electrical:—

South African General Electric Co., Ltd. ...	£177
Metropolitan Vickers Electric Co., Ltd.	250
Hubert Davies & Co., Ltd.	165
Telegraph Manufacturing Co. (Wire) ...	670
Wilson & Herd (Wire)	595
Griffin Engineering Co. (Wire)	206
United States Rubber Co. (Wire)	122
Metropolitan Vickers Electric Co. (Cables) ...	353
British General Electric Co.	156
Hume Pipe Co. (S.A.), Ltd. (Concrete Pipes)	1,450

Tar or Substitute:—

British Agencies	6,375
Archibald Taylor & Co. ...	3,830



The Great Vaal River Barrage as it is to-day.

PORTION OF GEDULD'S NEW PLANT AT WORK—RECENT ACCIDENTS—NEW IDEAS ON THE RIVER DIGGINGS—CROWN MINES RESULTS—VALUABLE DEVELOPMENT FIGURES.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, APRIL 21, 1923 No. 1647.

Manager of Crown Mines and New President of Mine Managers.

Mr. A. J. Walton, General Manager, Crown Mines, Ltd., new-elected President of the Association of Mine Managers of the Transvaal. The results secured last year by the great constellation of Central Rand properties which Mr. Walton manages are dealt with in this issue of the Journal.

Trade Mark.

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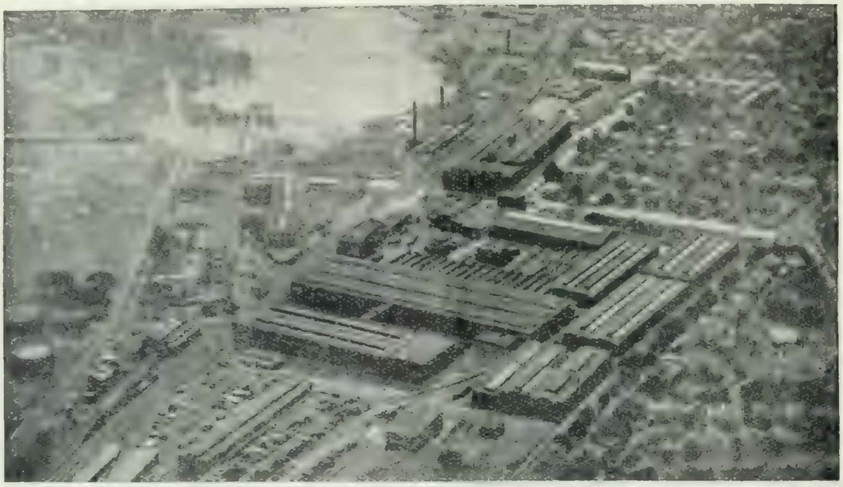

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Extended Crushing Operations on Far East Rand.

GEDULD'S NEW PLANT—PORTIONS ALREADY IN COMMISSION—FULL PLANT TO OPERATE FROM BEGINNING OF MAY—NEW STATE AREA'S EQUIPMENT NEARLY COMPLETED.

In recent issues of this journal the progress of constructional work at New State Areas and at the extended Geduld equipment has been dealt with in considerable detail, and numerous interesting photographs have portrayed how the work has progressed from time to time. We are now in a position to state that the new productive equipment at Geduld is virtually completed, in fact, portions of it already are in commission. Some of the cyanide tanks have been in use, and the crushing units will come into operation next week. Such operations are, of course, mainly in the nature of trial runs. Obviously in this, as with all new plants, a certain amount of re-adjustment will be necessary. However, it is hoped that as from the first of next month the whole of the new plant will come into operation on a regular crushing basis. At the New State Areas the plant is not quite completed, but this equipment, too, will come into operation early in May; just how soon it is not at the moment possible to say. The entry of the second Government lease mine, the New State Areas, into the productive list on a preliminary basis of 600,000 tons per annum, and the extension of the Geduld Proprietary equipment to a crushing basis of 65,000 tons per month, are matters of the utmost importance to the mining industry of the Witwatersrand, and it will be worth while again to refer to the outstanding features of the new plants.

A former well-known leader of the mining industry prominently associated with the Geduld Mines in their earlier days.

Mr. A. Brakhan, formerly Chairman of Messrs. A. Goerz & Co., Ltd. (now the Union Corporation), who died in London this week.

The New Plants.

The previous capacity of the Geduld milling equipment has been between 500,000 and 600,000 tons per annum, the equipment consisting of 100 stamps and eight tube mills. This is being raised to nearly 800,000 tons per annum by the erection of an additional 40 stamps and five tube mills, with, of course, the necessary additions to the crusher and sorting station, cyanide plant, etc. There will be no radical change in the method of ore treatment. It is, however, intended to crush the ore much finer than has hitherto been done, resulting in a higher proportion of slime and a lower value of residues. The cost of the plant has therefore been rather more than a simple addition to treat 25,000 tons per month would have involved, as the finer crushing will apply not only to the additional ore, but also to the ore treated in the previously existing plant.

New State's Equipment.

The New State Areas is the first gold mining proposition of importance on the Witwatersrand to discard a method of ore reduction which has been in vogue for more than a third of a century, and which admittedly still has a great deal to be said in its favour. It may be recalled that years ago the Denny Bros. advocated the abolition of gravity stamps and the substitution of some form of rolls. But the New State Company is the first mine to translate such a scheme into actual practice.

It will be recalled that the New State Company contributed to the cost of experiments at Springs Mines which were initiated with the hope that the stamp battery could be eliminated and a cheaper form of reduction plant adopted. The experiments were so successful that it was decided to adopt the all-sliming method of ore treatment, and it is hoped that in this way considerable saving in capital expenditure will be effected. The plant is designed for a cacacity of 50,000 tons per month, with the possibility of extension for a larger tonnage.

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Rand Ore Reserves.

LATEST CALCULATIONS IN RESPECT OF TWENTY-ONE MINES—SOME INTERESTING FIGURES—COMPARISONS WITH PREVIOUS YEAR.

The following data are abstracted from recently published reports by consulting engineers and managers. The figures indicate the ore reserve position at the end of last year and contrast the tonnage blocked out and determined to be of payable value at December 31, 1922, with the figures published in respect of the preceding year. It is not claimed that the statistics constitute a complete statement for the whole Rand. Numerous reports have yet to come to hand, and a complete and comparative statement as to ore reserves will be published as soon as all returns are available. For the present, however, the attached brief statements of the latest ore reserve positions of certain mines arranged, according to groups should be useful and instructive. Figures are in each instance as at December 31, 1922, and comparisons are with December 31, 1921.

Central Mining/Rand Mines Group.

CROWN MINES.

8,882,100 tons, assaying 6·1 dwts. Increase of 370,900 tons. Value remains the same.

DURBAN ROODEPOORT DEEP.

1,167,000 tons, assaying 6·7 dwts. Previous year, 1,092,400 tons, assaying 6·5 dwts.

EAST RAND PROPRIETARY.

1,724,350 tons, assaying 6·7 dwts. Decrease of 222,000 tons.

GELDENHUIS DEEP.

Ore reserves fairly well maintained at 885,000 tons. Owing to the lower pay limit employed, consequent on reduced working expenditure, value is 0·8 dwt. per ton lower. Maintenance of tonnage principally due to lower working expenses.

KNIGHT CENTRAL.

25,400 tons, assaying 5·6 dwts.

MODDERFONTEIN B.

2,690,000 tons, assaying 9·3 dwts. over 60 inches. Decreases of 163,700 tons, 0·3 dwt., and 3 inches. Reduced tonnage mainly brought about by reduced stoping widths. Decline in value due to lower value of ore developed.

ROSE DEEP.

2,128,800 tons, assaying 5·4 dwts. Decrease on the year of 455,650 tons. Increase of 0·2 dwt. in value.

VILLAGE DEEP.

2,115,400 tons, assaying 6·1 dwts. In addition nearly 400,000 tons developed but not yet valued. Slight increase in tonnage. Decline of 0·2 dwt. value.

Johannesburg Consolidated Investment Group.

CONSOLIDATED LANGLAAGTE.

1,385,000 stoping tons, assaying 6·4 dwts. over 51 inches. Small increase in quantity. Decrease of 0·1 dwt. in value.

GOVERNMENT AREAS.

10,324,000 tons, assaying 8·8 dwts. over 76 inches. Includes ore of 4 dwts. value and over. Reserves show slight increase in quantity and value.

NEW PRIMROSE.

25,000 tons, assaying 7 dwts. over 74 inches. Extensive reclamation work in progress.

NEW STATE AREAS.

1,100,000 tons, assaying 8·5 dwts. over 68 inches. Reserves include ore of 4·5 dwts and over. In addition approximately 330,000 tons same value partially developed.

NEW UNIFIED.

Ore reserves practically exhausted.

RANDFONTEIN CENTRAL.

4,274,000 tons, assaying 6·5 dwts. over 48 inches. Including 439,800 tons of Battery Reef, assaying 6 dwts. over 53 inches.

VAN RYN DEEP.

3,427,300 tons, assaying 8·4 dwts. over 77 inches. Increase of 110,300 tons. Decrease 0·8 dwt., due principally to increase of 4 inches in stoping width.

WITWATERSRAND G.M. CO.

457,400 tons, assaying 5·5 dwts. over 63 inches. Decrease of 89,900 tons.

Anglo-American Corporation.

BRAKPAN MINES.

2,459,280 tons, assaying 8·23 dwts. over 70 inches. Increase of 36,050 tons, decrease 0·38 dwt., increase 1·87 inches.

SPRINGS MINES.

3,146,217 tons, assaying 8·79 dwts. over 59·81 inches. Increase 89,986 tons, decrease 0·13 dwt., decrease 1·73 inches.

Union Corporation.

GEDULD PROPRIETARY.

(a) 3,800,000 tons, assaying 8·1 dwts. over 63 inches. Increase of 255,000 tons as compared with previous year. (b) 2,500,000 tons, assaying 4·5 dwts. over 62 inches. Latter tonnage brought within scope of payability almost entirely on account of reduced working costs since the strike.

MODDER DEEP.

4,800,000 tons, assaying 9·3 dwts. over 76 inches.

Anglo-French Exploration Company.

NEW KLEINFONTEIN.

1,208,655 tons, assaying 5·18 dwts. over 57·62 inches. Decrease 116,678 tons.

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WRIGHT'S ROPES

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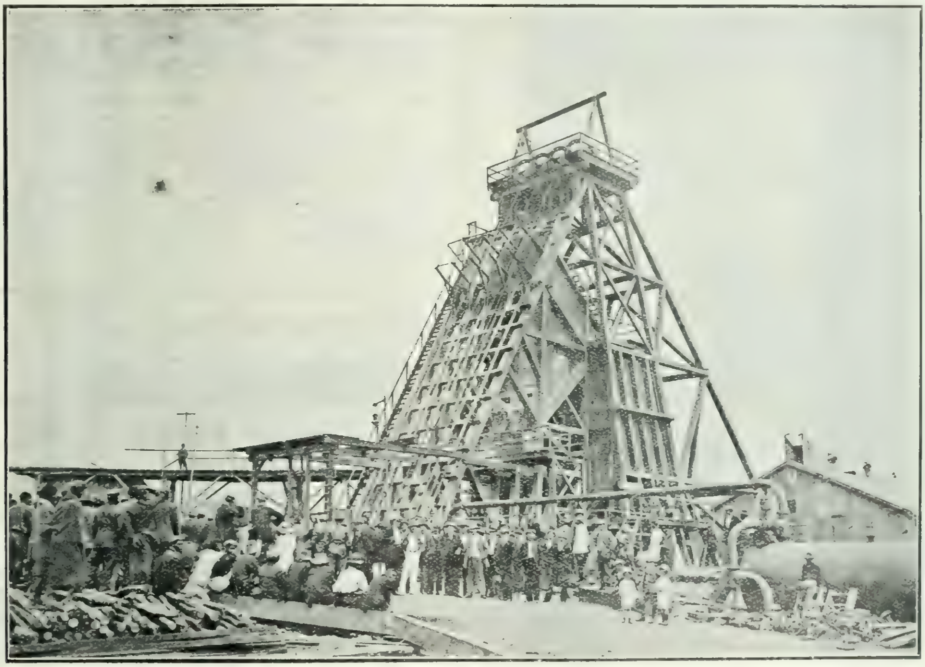
Heavy Fall of Ground at Randfontein.

TEN LEVELS SWEPT AWAY—LOSS OF 23 NATIVES—EFFECT ON OPERATIONS INSIGNIFICANT—THIS YEAR'S SERIOUS ACCIDENTS—A CYCLE OF CALAMITIES.

Last year the Witwatersrand Mining Industry created a fresh and highly creditable record in the fatal accident rate, but this year the returns have been somewhat marred by a succession of more or less serious accidents resulting in unfortunate losses of life at the Simmer and Jack, City Deep and New Kleinfontein, and now at the Randfontein Central.

A Prolific Cause of Disaster.

In each instance the cause of the disaster has been a collapse of a portion of the workings, and the accidents and their casualties have accordingly been grouped under the general category of Falls of Ground. This is, and always has been, by far and away the most prolific cause of mining mishaps and deaths and injuries on the Rand, and for years past strenuous efforts have been directed towards the minimising of the hazards which are inevitable in this respect. Naturally, as the mines become deeper and more extensive, the tendency will be for risks of this class to increase, and in view of the recent series of disasters of this nature it is to be anticipated that efforts, designed to reduce accidents due to falls of ground, will be intensified.



Block A Shaft, Randfontein Central, where a serious accident occurred a few days ago.

In so far as the most recent calamity of this kind is concerned, it is certainly a matter for congratulation that greater loss of life did not result, inasmuch as the larger portion of one of the old shafts at Randfontein caved in.

The circumstances relating to this West Rand catastrophe are briefly as follows:—

Ten Levels Swept Away.

The accident occurred on Saturday last on the Block "A" section of the mine, and the General Manager, Mr Beatty, has continued to direct the work of gangs organised from the north vertical shaft. The work of clearing the shaft is very difficult, and 2,000 feet of bent rails complicate it.

The collapse of the hanging wall, which swept down to the 17th station, has completely denuded the shaft of its fittings for a matter of 2,000 feet. Fortunately for the mine, the shaft will not have to be put into ship-shape order again for working purposes, as it is no longer necessary.

Though the death roll of natives is a heavy one, it is not as heavy as was at first expected. The very dangerous task of trying to trace survivors among the smashed timbering, twisted pipes and rails, and mass of fallen rock has been carried on determinedly by the mine officials and their volunteer gangs.

The Official Cable.

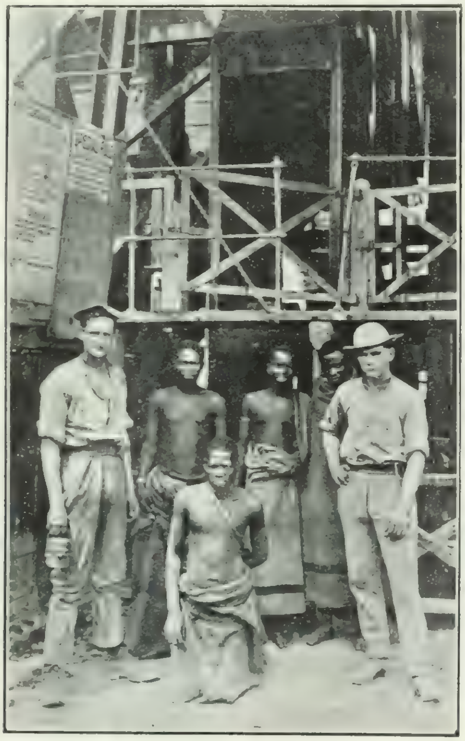
As a result of the disaster the Randfontein Central Gold Mining Company, Ltd., have cabled the following to their London offices:—

"Shaft stripped from No. 7 level to 17th station. Will be abandoned, as not required further. Unfortunately 23 natives killed. No European injured. Output this month may be somewhat affected."

Randfontein is essentially a proposition of vicissitudes, and although it is satisfactory that more lives were not lost in a collapse of such magnitude, and whilst it is a matter for congratulation that the fall occurred in a shaft no further required, it is nevertheless a bit of bad luck that the mishap should have taken place just when the property had at last turned the corner. Happily, however the effects of the accident are not likely to be at all serious, and with the new and splendidly-equipped deep shafts in commission, the Randfontein management need not be at all concerned about the loss of one of the antiquated shafts sunk a good many years ago. An official inquiry will be opened at Randfontein on Monday.

A Question in the House.

In connection with recent mine accidents on the Rand it is interesting to note that on Tuesday the Minister for Mines, answering a question by Mr. Mullineux, stated that the accident death rate on the Witwatersrand gold mines in 1922 was lower than in any previous years, but there has been an increase of about 50 per cent. in the rate during the first three months of this year. There is no necessity for a special inquiry at the present moment, as the matter is already receiving attention and inspectors of mines are watching the position with a view to deciding whether reorganisation of underground work is an important factor, continued the Minister. The matter was under discussion at last week's monthly meeting of inspectors of mines, and it was agreed that it was not yet possible to say definitely that reorganisation is the cause of increased accidents.



Randfontein.—A Scene at a Shaft Head.

LONDON METAL MARKET.

London, April 17.—On the London Metal Exchange today, standard copper closed at £73 7s. 6d. cash and £74 5s. three months; electrolytic copper £81 seller's option of shape and port of delivery, and £81 10s. buyer's option; copper wire bars, £81 10s.; standard tin, £211 17s. 6d. cash and £212 2s. 6d. three months; foreign lead £27 prompt and £27 2s. 6d. forward; quicksilver, £10 5s.; bar silver (spot), 32 3-8d.; bar gold, 88s. 9d.

HUGE STEAM SHOVELS.

The machinery recently sent out by a British firm for use on a big harbour construction job in Africa includes three of the largest steam shovels ever built in Great Britain. Each machine takes out 3½ cubic yards of material in every movement, yet it is so constructed that it remains perfectly firm on a 3ft. 6in. gauge railway. Each shovel is provided with three operating engines and main hoisting engine (which is also used for travelling), a swinging engine, and thrust engine. A steam-driven air compressor is also fitted to the shovel for driving drills which bore into the rock for blasting purposes. There is also an ample lighting equipment which enables the machine to be worked after dark.

WINNING COAL WITH ACID.

Some remarkable experiments recently made by a British professor in the treatment of coal with acid suggest that we are on the eve of quite a new method of winning coal. Hitherto explosives and mechanical coal-cutting machines have been the only auxiliary of the miner's pick, but this professor's researches suggest a method of disintegrating a coal seam by injecting into it an acid substance. The action of acid on coal is not only to dissolve the minerals which form the white partings in the seam of coal, but also to attack the coal itself to the extent of making it brittle and easily crushable between the fingers. Experiments have already been made in collieries with the introduction of sulphur dioxide to boreholes in the coal one or two days in advance of the work. Although these experiments have not been very conclusive they have aroused the greatest interest among coal owners in Great Britain.

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Novel Form of Hydraulicing.

TO BE ADOPTED NEAR CHRISTIANA—REMOVAL OF OVERBURDEN BY MEANS OF A FIRE ENGINE—A PROMISING VENTURE—HIGH GRADE STONES— OVER £200.000 RECOVERED IN THE VICINITY—REPORT BY THE LATE MR. FRAMES—THE PROSPECTS OF DIAMANT.

A decidedly interesting, and, in some respects, novel method of recovering diamonds from alluvial ground is about to be undertaken on the farm Diamant, near Christiana. This method, although not entirely new to Southern Africa, inasmuch as it savours largely of hydraulicing (and hydraulicing has been adopted on the Swaziland Tin Fields and the Ruwe Gold Alluvials in the Congo) will be applied in a novel manner.

An Interesting Project.

A large fire engine of high power and big capacity, with four nozzles, has been purchased in Capetown by the promoters of this scheme. The fire engine already has been despatched to the property and it will be employed in the removal of silt or overburden lying on what is believed to be exceedingly rich diamondiferous alluvial.

It is stated that stones to the value of over £200,000 already have been recovered from the ground in the vicinity of the claims which it is now proposed to exploit.

The gem-bearing alluvials at this point are overlaid by from 20 to 50 feet of overburden, and it is proposed to deal first of all with the ground in the vicinity of the Vaal.

It is hoped to have the engine in full working order this month, and to employ gravitators which will handle very large quantities of ground.

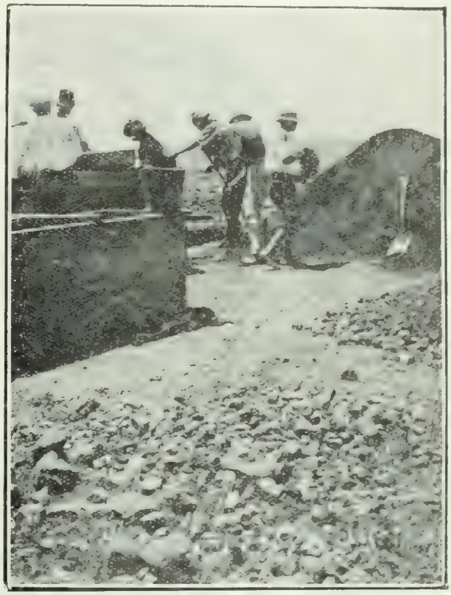
A Report by the late Mr. Frames.

A report on the diamond-bearing gravels existing on the farm Diamant No 631, upon which are situated the areas which will be attacked by this form of hydraulicing, was made some time ago by the late Mr. Minett Frames. In the course of his report Mr. Frames stated:—

"The farm Diamant, in extent 1,648 morgen 490 square roods, lies opposite the village of Christiana, on the Free State side of the Vaal River. It is one of the group of farms with what is known as Free State Title—that is, all minerals and precious stones belong to the owner and are not subject to any Government tax. From the Government Records, January-October, 1920, we find Diamant yielding 635½ carats, valued at £9,825. This is an exceedingly good result when it is taken into consideration how the work is done and the leisurely manner in which it is conducted and the small quantity of ground treated. Diamonds found in November, 1920: 61 carats, value £711. Mr. Nell gives the number of diggers as four. These men are all one-day-a-week 'wash' men. They averaged 15 carats, worth £177, for one month, and probably washed only four days. With 10 boys per digger the amount of ground which actually went through the machine would be somewhere between 80-100 loads, if so much. The rotary pans used by these men have a diameter of 3ft. 6in., a mere toy, and quite incapable of dealing with 20 loads a day constantly. The most important bodies of gravel are divided into high level and deep or low level ground. In point of age the high level is older, and fills an ancient course of the Vaal River, than the low level gravel.

The High and Low Level Gravels.

"At the works of the 'Diamond Deeps, Ltd.,' the gravel has a thickness of 9ft. and rests on an uneven bottom of rocks belonging to the Ventersdorp volcanic series. It is to be expected that the gravel will vary in thickness, according to the extent the river has sculptured its bed. In places minor 'gullies' and 'pot-holes" will be found and hard resistant rock areas will also occur as miniature kopjes (called by the diggers 'bumps') protruding through a sea of gravel. An irregularly planed river bed in which 'bumps,' sloots, gullies and pot-holes occur, generally affords areas of great local concentration yielding often a rich crop of diamonds. I examined some of the gravel taken from the shafts which had been treated for its diamond contents and found a heavy 'wash' and such a one is considered by the experienced digger to indicate rich ground. From what I saw regarding quantities and physical appearance of the 'wash' from the deep or low level gravels there is every reason to anticipate a handsome yield of diamonds. Provided the flat bordering the river is underlaid by one continuous and unbroken sheet of gravel there are roughly 8 to 10 million loads of 16 cubic feet. These are contained in a more ancient river bed than the gravel dealt with. In places along the margins it appears to be only 2 or 3 feet thick, whilst in trial pits well within the area it is from 6 to 9 feet thick. Taking an arbitrary figure, say 5 feet as the average thickness, there would be in this area approximately 400,000 loads in the solid. The cost of mining and treating the high level gravel will be comparatively low, as there are no difficulties to overcome in regard to overburden, water, etc. The gravel is of a loose nature and easily mined. I have just received from the Mining Department the following information with regard to diamond returns: January-October, 1920: Number of diggers, 4 to 21; average, 13; 635½ carats, value £9,925. Thus the 13 diggers, in ten months, earned or recovered per digger £756, which is no mean result considering the primitive methods employed."



A Scene on the River Diggings.

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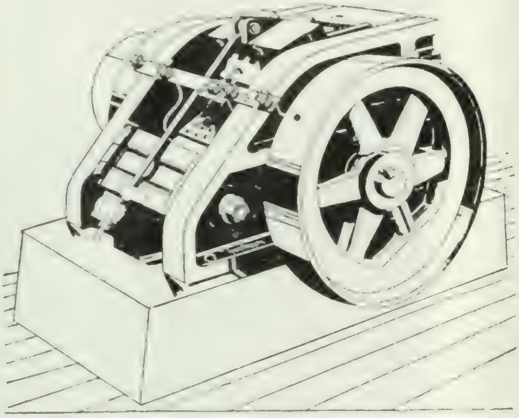

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Progress on the Far East Rand.

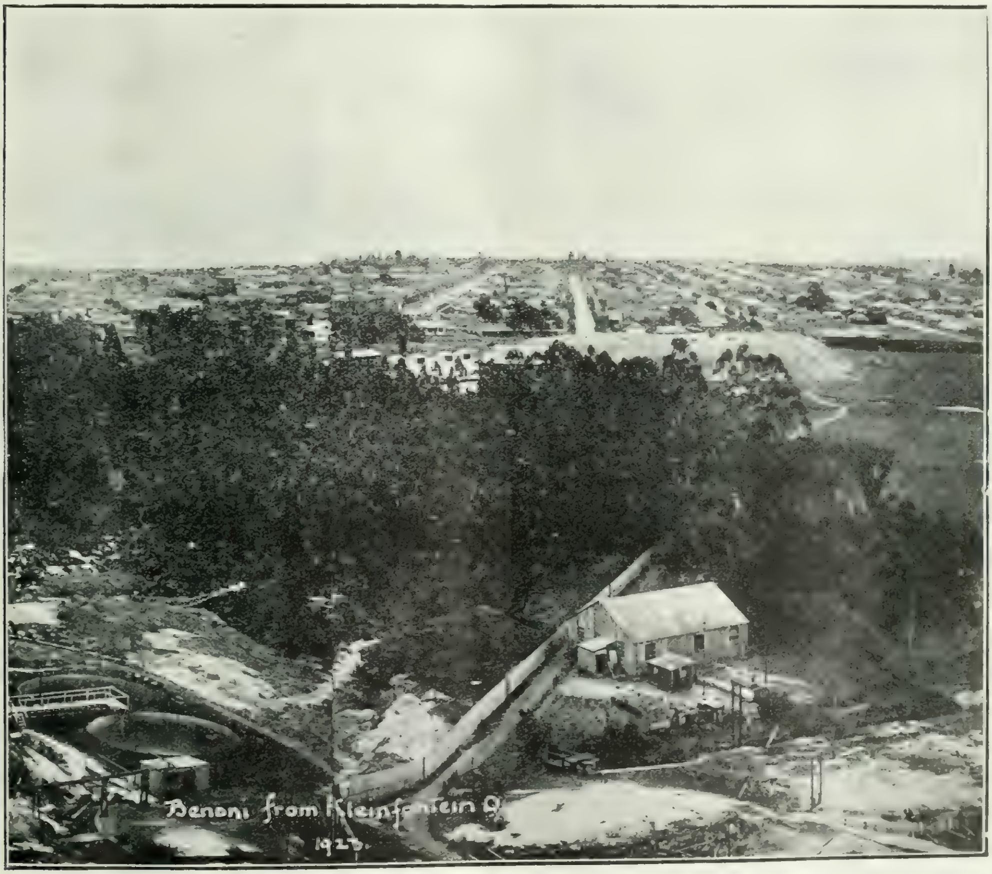
BENONI A GROWING URBAN CENTRE—NEW RAILWAY DEVIATION—HOW THE NEW KLEINFONTEIN WILL BENEFIT FROM REDUCED COSTS.

The opening of the Dunswart-Apex deviation last week by Col. Mentz, Minister for Defence, was the occasion of much jubilation. The New Kleinfontein mine on the east of the township has played a big part in building up the prosperity of the township, and we are glad this week to be able to reproduce the central portion of a unique photo taken from the New Kleinfontein dump showing the far-flung streets and roads of Benoni and the Kleinfontein Power Station in the middle distance. A few weeks ago we printed the annual report of the Consulting Engineer of the New Kleinfontein, and there is an important moral contained in the last few lines of it which may here be recalled.

In concluding his report Mr. Way wrote: "Although the ore reserves show a decreased tonnage, it is satisfactory to note that their value has been maintained. Even with the reduced costs now prevailing, it is paramountly necessary to maintain the strictest economy and to make every effort towards further reduction, without sacrificing efficiency, if your Company's mine is to remain a profit-earning venture. The importance of this is borne out by the fact that the large area embraced by the Apex Mynpacht is shut down, because the profitable margin between the possible yield from this area and working costs at the present level is non-existent. If it should be possible to reduce working costs to the pre-war level, that is, to the neighbourhood of from 16s. to 17s. per ton, then it is reasonable to believe that there is a very large tonnage of ore available which could be worked profitably."

The Recent Function.

Very little, however, was said about the aspect of the future of the Far East Rand at the Deviation Opening Ceremony last week. Col. Mentz, in his opening address, stated that anyone who took a deep interest in the progress and development of this country would feel heartened



Benoni looking west from New Kleinfontein Dump. In the foreground is the New Kleinfontein Reduction Works, in the middle distance behind the trees is the Central Power Station of the Kleinfontein Power Association, and in the background are the broad, straight streets of the rising township of Benoni, which has just achieved a new and more convenient railway station.

and commercial to come to this great centre of industry. Benoni was known to be a place where things moved in one direction or another, and one was imbued with a feeling of optimism in this centre, with its gold mines and its coal mines, great districts and others awaiting development. And what was more encouraging (inquired the speaker) than to see the factories and smelting works and further factories being built there? When one noticed this one felt that the community was looking ahead. The time would come when the gold and coal mines were worked out, but then they would have their iron and steel works, and other works, which were the permanent part in the latter [illegible] for the big industries of the country.

Deviation Scheme.

Dealing with the construction work, the Minister mentioned that it had been put in hand in anticipation of Parliamentary sanction to cope with the unemployment at the time, and on account of the trade and traffic of the area the Government was fully justified in complying with the requests of the people of those parts for the deviation. After complimenting the architect and paying a tribute to the manner in which the men had "taken their coats off" and worked, Col. Mentz on behalf of the Government expressed gratitude to Mr J. F. Bateson, Resident Engineer, for his energy and application. Thanks were accorded the Mayor and Councillors, who had given water free of charge to the construction camps, and stone and ballast at nominal rates. It was largely owing to this, he said, that it had been possible to get through the work in the stipulated time and on the stipulated conditions. The Railway Administration was prepared to render every assistance to the Town Council in connection with the industrial sites which were being laid out close to the railway line. "I pray," added the Minister, after indicating the progress made in Benoni during the last decade, "that this new line and station will lead to greater progress, greater development and greater happiness for all of us who are trying to make the best of this best of all countries in God's world."

The remedy for Benoni, as for the rest of the Rand, therefore, is, of course, to put its trust in Providence and strive to reduce working costs.

MARCH COMPANY REGISTRATIONS.

John Tullis & Sons (South Africa), Ltd., 14 Central House, Main Street, Johannesburg; capital £100.

Premier African Torbanite Syndicate, Ltd., 45 Steytler's Buildings, Loveday Street, Johannesburg; capital £25,000.

Silverton Tannery and Boot Factory, Ltd., Somerset House, 178 Vermeulen Street, Pretoria; capital £80,000.

Norman Wheel, Company, Ltd., 74 Railway Street, Pretoria; capital £600.

The Publicity Corporation of South Africa, Ltd., 78 and 79 Sauer's Buildings, Joubert Street, Johannesburg; capital £450.

Kenilworth Developing Syndicate, Ltd., Continental House, Harrison Street, Johannesburg; capital £2,500.

Tarlton Limes, Ltd., 63a Pritchard Street, Johannesburg; capital £8,000.

Concord Investment Company, Ltd., Second Street, Springs; capital £8,000.

F. Allwright & Company, Ltd., 8 Nind Street, Doornfontein, Johannesburg; capital £5,000.

Base Metals Investments, Ltd., 22 Standard Bank Buildings, Commissioner Street, Johannesburg; capital £1,000.

Mortgagees Trust, Ltd., 42 Harrison Street, Johannesburg; capital £10.

Mining Men and Matters.

Sir Evelyn Wallers is proceeding to England.

* * *

Mr J. L. Siddall has left for Capetown.

* * *

Mr H. Newhouse has returned to South Africa.

* * *

Major L. A. Pollock, M.C., has been appointed Manager of the Anglo American Corporation of South Africa. Major Pollock has been a Director of the Corporation since its inception.

* * *

The ordinary general meeting of the Chemical, Metallurgical and Mining Society will be held in the Scientific and Technical Club, 100 Fox Street, Johannesburg, on Saturday, the 21st inst., at 7.45 p.m. Contributions to the several discussions are welcomed and may be read at the meeting or handed to the secretary for publication. Dinner will be served in the club on the evenings of general meetings from 6.45 p.m. by arrangement. The agenda includes an exhibition and demonstration of devices, etc., of practical advantage. Lecture: "Studies in the Methods and Results of Dust Sampling," by A. Mavrogordato. (This lecture will be issued as a publication of the S.A. Institute for Medical Research, and may not be published elsewhere; an abstract will be written by Dr. Mavrogordato for publication in the Society's *Journal*.) Paper for reading: "Further Note on Return to Capital Invested in the Witwatersrand," by R. A. Lehfeldt. Reply to discussion: "Notes on Oragnisation for Promoting Industrial Efficiency," by S. de Smidt. Final discussion: "Some Notes on the Evolution of the Konimeter," by R. A. H. Flugge-de Smidt. Discussion: (1) "The Value of Rand Gold Mining Investments," by W. A. Caldecott and G. J. V. Clarence; (2) "Alcohol Fuel Mixture," by R. H. Adam; (3) "The Lowest Temperature Yet Attained," by R. H. Paine; (4) "Return to Capital Invested in the Witwatersrand," by R. A. Lehfeldt; (5) "Recovery of Gold by Blanket Concentration in Substitution of Plate Amalgamation," by F. Wartenweiler; (6) "Notes on Cupellation Losses," by R. H. S. Wilkes; (7) "Note on the Contamination of Coke Samples when Prepared in a Disc Grinder," by J. Henderson; (8) "The Solubility of Gold Amalgam in Cyanide Solution," by H. A. White; (9) "Observations on the Tin Antimony Lead Alloys," by R. W. Irwin. On Saturday, April 28, at 8 p.m., a lecture will be given at the Scientific and Technical Club by Mr H. Brearley, Director of Messrs. Brown Bayley's Steel Works, Ltd., Sheffield, who is on a visit to South Africa. The title of the lecture will be "Testing of Steel." Members of the Associated Scientific and Technical Societies and friends accompanying them are cordially invited. The usual monthly exhibition of films will not take place this month.

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H. C. C.—The latest report of the company you mention appears in this week's issue.

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The Year with the Crown Mines, Limited.

A SATISFACTORY SHOWING—RATE OF PROFITS MAINTAINED—EFFECTS OF IMPROVED EFFICIENCY—ADEQUATE NATIVE LABOUR SUPPLY AND HIGHER YIELD.

There are several satisfactory features in the annual report of the Crown Mines for the year 1922. In the course of their statement the directors point out that in spite of the effects of the general strike of workmen employed on the Witwatersrand gold mines, which took place early in the year and lasted over two months, and the marked reduction in the price realised for gold, the profit earned last year was only 4d. per ton milled less than that of the previous year. This satisfactory showing is attributable to the great improvement in efficiency, especially underground, consequent upon the reorganisation brought about after the termination of the strike; to an adequate native labour supply and a yield higher by 0·350 dwt. than that of the preceding twelve months. To illustrate the effects of the improvement in efficiency, it is only necessary to record that working costs during the latter half of the year under review averaged 19s. 9d. per ton milled, which compares with an average of 25s. for the year 1921. Further, the monthly tonnage milled during the same period averaged 216,433 tons, which figure is greatly in excess of the corresponding figure of the previous year. The ore reserve was re-estimated and revalued at 31st December, 1922, and shows an increase of 370,900 tons, whilst the value remains the same. The balance of working expenditure and revenue account for the year shows a net profit of £547,408 16s. 1d. This amount, together with the balance of £502,559 16s. 8d. unappropriated at the commencement of the year, and forfeited dividends £340 1s. 8d., makes a total of £1,050,308, of which £369,282 was distributed in dividends.

Comparison of Years' Results.

The salient features in comparison with the previous year's results may be summarised as follows:—

Tonnage milled, 1921, 2,177,000; 1922, 1,924,600. Yield per ton, dwts., 1921, 5·907; 1922, 6·257. Value of yield per ton at standard price of gold, 1921, 24s. 9·7d.; 1922, 26s. 3·4d. Revenue on above basis, 1921, £2,700,625; 1922, £2,529,019. Additional revenue due to difference between standard value and price actually obtained, 1921, £688,123; 1922, £188,468. Additional revenue due to difference between standard value and price actually obtained (per ton milled), 1921, 6s. 3·9d.; 1922, 1s. 11·5d.; total revenue, 1921, £3,388,748; 1922, £2,717,487; total revenue per ton milled, 1921, 31s. 1·6d.; 1922, 28s. 2·9d. Working cost per ton milled, 1921, 24s. 11·5d.; 1922, 22s. 4·9d. Working profit per ton milled, 1921, 6s. 2·1d.; 1922, 5s. 10·0d. Total working profit, 1921, £672,030; 1922, £561,322. Ore reserve, tons, 1921, 8,511,200; 1922, 8,882,100. Ore reserve, value, dwts., 1921, 6·1; 1922, 6·1.

The Consulting Engineer, Mr. H. Stuart Martin, writes: Owing to the dislocation of operations occasioned by the long strike in the first quarter of 1922, and the fall of over 15s. per oz. in the average price realised for gold, the profit for the year under review was £110,708 less than that for 1921. The strike involved the Company in an actual loss of £89,663, besides loss of profit, and the fall in the price of gold was equivalent to over £456,000 on the year's output, or nearly 4s. 9d. per ton milled. This decline in the price of gold was largely offset by a higher yield per ton, and a reduction in the working costs, so that the ultimate profit per ton is only 4d. lower. Comparisons of the yearly summaries given above do not indicate the extent of the improvement in efficiency and results obtained by the reorganisation subsequent to the strike. It was not until the end of June that the native labour force was brought up to near full requirements, so that only during the last six months of the year were operations on an approximately normal basis. For this period, the monthly tonnage milled averaged 216,433 tons—a higher rate than had previously been attained for an equal period in the mine's history. Likewise the development footage accomplished—an average of 4,759 feet per month—was a record. Working costs were brought down to an average of 19s. 9d. per ton milled, *i.e.*, a reduction of 5s. 3d. compared with the previous year's costs; and, as the value of the yield during these months at standard price of gold equalled 26s. 1d. per ton, giving a profit of 6s. 4d. per ton on this basis, the mine is no longer "dependent for its profits on the so-called premium on gold," as was the case in the previous year.

Development and Ore Reserves.

Development work was carried out on an extensive scale during the latter half of 1922; still, the total footage accomplished is not equal to that of the year before. Of the footage exposing reef, the payable percentage is somewhat higher, though the value thereof is not quite so good. The payable tonnage developed is estimated at 2,065,300 tons, having an average value of 6·0 dwts., which, although slightly under mine average values, is a satisfactory result of the year's widely distributed exploratory work.

The revaluation of the ore reserves as at 31st December, 1922, gives the following estimates:

Main Reef Leader, 5,318,400 tons; value 6·5 dwts.; South Reef, 3.563,700 tons; value 5·5 dwts.; total, tons. 8.882,100, value 6·1 dwts.

Compared with the previous year's estimates; there is an increase in the available ore of 179,800 tons, while the value remains the same. Considering the time lost through the strike, good headway was made on the Southern development programme. Preparatory work in connection with 15A sub-vertical and the central sub-incline was completed, and some sinking done. Full sinking is now in progress at both these shafts, as well as at 7A and 14A sub-verticals. Equipment of No. 11 and No. 12 shafts is now finished, and development of the Langlaagte Proprietary area is well under way. The purchase of the Langlaagte Proprietary claims and the mining rights of portions of Mooifontein and Vierfontein has added materially to the potential resources of the Company, and will make it easier to plan and carry out the future development programme. Capital expenditure at the mine for the current year will be heavier than that for the past year, and will be chiefly on account of sinking the sub-vertical shafts, additions to the compressed air and pumping services, and erection of a portion of the compound for the southern section.

Tribute to Mr. Walton.

It is due to the loyalty and able efforts of the general manager and his staff that the property suffered no material damage during the strike and rebellion; and it is most regrettable that some of the staff were injured by violence. It is greatly to the credit of your native employees that, under severe provocation during the crisis, they remained loyal and peaceable and assisted in the maintenance of essential services. For the satisfactory results achieved subsequent to the strike, Mr Walton and his assistants are to be congratulated, and it is pleasing to note that the more reasonable attitude of the employees has contributed materially to the improved conditions.

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Pivaan Coal.

A NEW NATAL ENTERPRISE.

The Pivaan Coal and Oil Shale Syndicate, Ltd., is engaged in raising further capital to exploit its large and promising coal-bearing areas in Northern Natal. The venture is a Durban one, and from the prospectus issued at the beginning of this year we learn that in consideration of the issue of 26,000 shares of 10s. each (fully paid) to the vendors, the syndicate has acquired from them the coal and oil shale prospecting and mining rights over a number of farms situate in the Utrecht district, Natal. These farms lie between the Pongola and Pivaan rivers and their tributaries. The several option agreements have now been ceded to the syndicate by the vendors, and they can be inspected at the syndicate's office. In addition to the above-mentioned farms the vendors have obtained options over approximately 16,000 acres in the same district, which options they have undertaken to cede to the syndicate, if required, without further payment to them. From the consulting engineer's reports it is considered that of the properties all the farms named have been proved to carry valuable seams of high grade steam coal of Admiralty standard. Kempslust has been proved to contain valuable seams of high grade bituminous and coking coal. Commissie Kraal also contains seams of high grade bituminous coal, which is also excellent coking coal, and in addition thick seams of excellent oil shale, yielding a high percentage of crude oil.

Mr. T. G. Colquhoun, M.I.M.E., consulting engineer to the syndicate, who has had a wide experience of South African coalfields, proceeded to the Pivaan areas in September, 1921, and remained there actively engaged in pros ing and directing operations on behalf of the syndicate until the end of July, 1922. Boreholes representing some 1,800 feet of drilling have been put down to test the thickness of the various seams and to prove the quality of the coal and oil shales. Adits have been driven into the seams found outcropping on the hillsides of "Boschkranz," subdivision A of "Mooihoek," and the eastern portion of "Mooihoek." Four seams occur on a front of about six miles, while the existence of a fifth seam has been located on one of the farms mentioned in the schedule, where it was found outcropping. No work has yet been done on this fifth seam. The main seam of coal is 7 feet 6 inches thick on part of "Boschkranz," and the average thickness of this seam along the front is, according to Mr. Colquhoun's report, over 6 feet. One adit has been driven into the main a for 35 yards through solid walls of coal, while a number of other adits have been driven to shorter distances. Between 40 and 50 assays have been made of the coal and oil shale samples, taken from the syndicate's property, by Messrs. Puntan & Kloot, analytical chemists, of Durban, while check assays of some of the coal samples have been made by Messrs. Heyman, of Johannesburg, and other analytical chemists, confirming the results obtained by Messrs. Puntan & Kloot.

CONSULTING ENGINEER'S REPORT.

Extracts from reports dated December 26th, 1921:—

"*Situation and Railway Facilities.*—The farms 'Boschkranz,' 'Elandsberg,' 'Mooihoek' and 'Kempslust' are situated from 12 to 17 miles from the Glencoe-Paulpietersburg-Ermelo railway. A junction may be made at or near Dumbe station, which is 326 miles from Durban and 389 miles from Delagoa Bay. A branch line has already been surveyed from Dumbe to Makaties Kop, which is owned by the Northern Natal Collieries Company. This branch line, when built, will be about half way to 'Boschkranz,' which is about seven miles further west along the valley, which presents no engineering difficulties for railway construction, and should not cost more than £4,000 per mile. It may be here borne in mind that the suggested railway connecting Kosi Bay or Sordwana Bay with the Rand may form a junction with the existing Paulpietersburg-Piet Retief line not far from this area. If this line be built this high grade coal will be the nearest of its kind to the port. *Physical Features.*—These farms contain the same seams that are found on Makaties Kop, and have been proved by adits where the coal is outcropping on the foothills and slopes below the escarpment which runs the whole length of the properties in question. The horizon of these outcrops is approximately 4,800 to 5,000 feet above sea level, and is generally uniform; few breaks or dislocations in the strata are to be seen. . . . The same seams are seen outcropping on the farther side of this plateau, four miles to the south at about the same horizon, viz., 4,750 feet above sea level, on the farm 'Frischgewaagd,' where the main seam is 6 feet 2 inches. The following are sections of the seams at 'Boschkranz' and 'Mooihoek,' as found at the outcrop.

'Boschkranz.'	Position above sea level.	'Mooihoek.'	Position above sea level.
3 feet 9 inches	5,055	3 feet 7 inches	5,030
3 feet 3 inches	5,015	3 feet 0 inches	4,980
7 feet 0 inches	4,980	4 feet 9 inches	4,930
3 feet 0 inches	4,950	2 feet 0 inches	4,880

"*Estimated Quantity of Coal.*—I estimate the 7 feet seam alone, taking it to average 6 feet of coal over 8,000 acres, will yield 78,720,000 tons, and, averaging the other three seams at 3 feet each, these would give an additional 118,080,000 tons. This is without making any allowance for dykes, which are common to Natal. *Values.*—The calorific values of three analyses of the main seam are given as 14·21, 14·41 and 14·16. Specific gravity, 1·35. It is a coal that can be cheaply worked, and there is area enough for half a dozen collieries. The directors of the syndicate feel justified in believing that the syndicate possesses a coal area second to none in South Africa, and capable of yielding coal little, if anything, inferior to good grade Welsh coal, and eminently suitable for export. In view of this, the syndicate should materially benefit by the new Coal Grading Act in finding purchasers for their various coal areas, which cover vast deposits of high grade steam and navigation coal. The operations of this Syndicate as at present constituted will, it is proposed, be directed to offering its areas for sale to mining companies or otherwise and turning same to marketable account. Such further prospecting and proving operations as may be considered necessary will be carried out.

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TOPICS OF THE WEEK.

The E.R.P.M. and Farmers.

Some little time ago statistics abstracted from the reports of the Government Mining Engineer showed that the Mines of the Witwatersrand expended, in 1921, close on a million and a half sterling for foodstuffs supplied free to coloured labourers and fodder for stables. This large amount represented the purchases by the mines from the farmers, and does not take into account the indirect purchases by the employees and communities supported by the mines.

In addition to this, the mines, in 1921, spent £559,000 on mining poles and lagging, and in respect of the transport of these poles to the Rand. This sum was paid out for timber grown in South Africa.

Adding these two amounts together it will be seen that the direct purchases by the mines from farmers and tree growers in the Union during 1921 represented a sum of over two millions sterling.

It will be of considerable interest to examine this aspect of the mining industry in regard to one particular mine, the East Rand Proprietary. In 1922 this mine purchased the following amounts of South African foodstuffs and timber:—

		Weight or Quantity.	Value £
FOODS, Etc. (supplied *free* to coloured labourers)			
Beans	lb	381,137	2,125
Meal (Mealie, Kaffir Corn, etc.)	bags	36,311	29,003
Malt and Cereals for Beer	value	—	1,591
Meat	lb	2,056,275	23,386
Salt	bags	121	148
Groceries, Coffee, Sugar, Oil, Ghee, Molasses, etc.	value	—	15
Sundry Food, including Bread	value	—	9,256
Vegetables	value	—	3,052
TIMBER:			
Mining Poles and Lagging	value	—	18,851
Other	value	—	1,918
		Total Value	£92,378

It should be clear from these figures that the closure of the East Rand Proprietary Mines would not only be disastrous to the Boksburg district and the Witwatersrand generally, but also that the cessation of the Company's purchasing power would exert a direct and unfavourable and immediate influence upon agriculturists and plantation owners situated in various parts of South Africa. The E.R.P.M., it will be observed from the forgoing figures, spent nearly £100,000 on foodstuffs and timber last year, and this amount would, of course, have been substantially more had it not been for the strike. As it was, however, the Company expended an average amount of between £8,000 and £9,000 per month on the produce of farms and plantations.

Union Corporation Annual Report.

An advance copy of the annual report of the Union Corporation shows that its activities continue to be crowned with success. The balance-sheet shows that Government securities and bills are now £409,000 against £458,000, and creditors are reduced from £1,078,000 to £896,000, excess of cash and cash assets over liabilities being £130,000 against £140,000. Somewhat strikingly and as indicating confidence regarding the future, the balance of stock shows increase by £34,000, and shares and debenture holdings, taken at or under cost, are £1,109,000 against £1,066,000. The latter are chiefly Gedulds, Modder Deep and San Francisco Mines, and would, if taken at market prices, be very substantially in excess of book cost. It is upon these undertakings that the immediate future of the Corporation rests. With respect to the Modder Deep, there has been a striking reduction in costs and an increase in rate of milling. The resultant profit, after allowing for the gold premium, is appreciably larger than before the premium existed. With respect to Geduld, had it not been for the strike last year's figures would have been well up to the average, but in the future all records should be beaten, as the enlargement of the reduction works to a capacity of 780,000 tons a year, as against 550,000 tons at present, is expected to be brought into commission during next month. It is, however, to the San Francisco interest that the Corporation is apparently looking forward to increased profit in the future. The profits for the five months to February 21 last were $290,000, as compared with $221,500 for the previous six months, and with $31,000 for the six months prior to that, the proportion of costs to returns being 42, 52 and 84·5 per cent. This is without material revenue from the zinc concentrates, which are expected to show an important addition to the profits, while in May the plant, enlarged by 100 per cent., will begin to operate partially, and fully in July. This prompts the Union Corporation directors to remark that "very handsome profits should be made and the first dividend declared at the end of the year; and further that the Corporation's increased holding promises to augment considerably the future profits of the Corporation.

Increasing Interest in Oil Shales.

The news that the Harper-Langbergh process was being put to a practical test in Johannesburg is giving considerable readily increasing interest to the subject of oil shales. In the Colorado School of Mines Quarterly there is a partial review of the oil shale occurrences of the world by Mr. V. Alderson, which gives a prominent place to the South African deposits. The facts about this country given by Mr. Alderson are already familiar to our readers. It is noteworthy that at a recent meeting of the American Chemical Society Dr. R. H. McKee traversed the subject of the position of the United States in regard to the supply of petroleum. He asserted that production was practically at its peak and probably within three years the output of wells in America would begin to decline. It must be remembered that this decline, when it does start, will be at a very slow rate. Dr McKee does not expect that any new large petroleum fields will be discovered in that country. The demand for oil in America, he states, is increasing at the rate of about 50 million barrels a year. Another interesting point he referred to was that much of the gasolene sold was a mixture of cracked gasolene of 40 per cent. unsaturated content with straight distillate gasolene of low unsaturated content. It was only due to the great improvement in the automobile that it was able to run on such spirit, as, he remarked, it was not uncommon to have to put in one's car a gasolene carrying 20 per cent. of unsaturated constituents, which means that such gasolene on standing and in contact with air, discolours and separates, after a time, a small amount of brown tar-like deposit. Mr. McKee, with other authorities turns to the shale deposits of the world as a supplementary supply to liquid petroleum. The enormous scale on which these are known to exist would furnish a supply of petroleum of incalculable extent. In the Green River section of Colorado alone, he estimated that the deposits would be sufficient to supply 64 thousand million barrels of petroleum, which is eight times larger than the total of the well petroleum of America since the first oil well was drilled in 1859, and is more than five times the total production of the world since that year. In dealing with the subject of distillation he remarked that, in spite of numerous retorting schemes proposed by American inventors, few believed that any one of these retorts is certain to be practicable when used on a large scale. The ideal process will be one permitting continued operation on a large scale with minimum labour and with the recovery of good yields of commercially utilised products.

The Railway Position.

There are several interesting points in the latest monthly bulletin issued by the General Manager of the S.A.R. *Inter alia*, it says that the earnings of the railways for the calendar year 1922 totalled £19,744,623, compared with £22,091,326 in 1921. This represented a decrease in 1922 of £2,346,703, or nearly 11 per cent. As a point of interest, it may be noted that railway earnings in 1913, the year before the outbreak of war, amounted to £12,388,755, and that the earnings for last year showed an increase of roughly 60 per cent. over the 1913 receipts. In 1922, compared with 1921, there was a falling-off in the volume of revenue-earning traffic under all main heads, viz.:—

	1922	1921.
Passengers (No.)	60,564,057	62,550,800
Coal (tons)	7,461,416	8,762,113
Goods (tons)	7,347,256	7,355,822
Gross tonnage goods and coal ...	14,808,672	16,117,935

Passenger traffic decreased by 3 per cent., coal traffic by 15 per cent., goods by 1 per cent., and the gross tonnage of revenue-earning traffic by 8 per cent. The average monthly tonnage forwarded from Delagoa Bay rose from 9,039 in 1921 to 11,799 in 1922, an increase of 2,760 tons, or nearly 9 per cent. In 1922 the average monthly volume of sea-borne traffic forwarded from Delagoa Bay to the competitive zone represented 53 per cent. of the total traffic forwarded from all ports, compared with an average monthly percentage of 44 in 1921. In reporting upon developments in the Port Elizabeth Division, the Divisional Superintendent of Railways states that the Lake Mentz Dam on the Sundays River has been completed. It is anticipated that this irrigation scheme will provide a wide area with a reliable source of supply. During February, 73,729lb. of tin ore were railed from stations on the Pretoria Division to Durban for export. On the Johannesburg Division a slight improvement was noticed in the traffic position during the quarter ended 31st December last. With the exception of the Breyten section, an increase was recorded in the tonnage conveyed over all sections compared with the corresponding period of the previous year. Little export coal business was done by the Transvaal Collieries. In November, 1921, 100 tons of silver-lead bullion were dispatched from Argent to Lourenco Marques for shipment to Europe. The tonnages dispatched in October, November and December, 1922, were 680, 351, and 443 tons respectively. During the year 1922 there has been a steady improvement in shipping at Walvis Bay, particularly during the last six months of the year. The main items of landed cargo represent machinery for the development of the copper mines at Tsumeb, timber for a jetty just completed and for a new bonded store. Guano has increased owing to a new guano dump having been found at Sandwich Harbour. Direct shipments of oil and petrol are now arriving from New York. There was a decrease of 617 tons in general cargo shipped, due to the fact that no maize was dispatched overseas last year owing to drought in the Grootfontein district. In the previous year 650 tons were dealt with. Copper ore shipments decreased by 2,472 tons, due to market fluctuations and to the fact that ore is now being smelted locally on a larger scale. Good progress has been made with the new graving dock at Durban. The preparatory work for main walls of the dock, return wall south side and one wall of outer caisson chamber had been completed at 31st January last. The removal of sand and clay from between the walls progressed steadily. The excavation in places was down to 15 feet below L.W.O.S.T. 466,607 cubic yards of material had been excavated, comprising 424,282 cubic yards of sand and clay and 42,325 cubic yards of shale. The percentages of dock excavation completed were, sand and clay 80 per cent. and shale 85 per cent. The main walls were well advanced. 400 feet had been completed to coping level, and 99,029 cubic yards of concrete had been placed. The percentage of concrete placed was 42. 32,809 cubic feet of granite had been laid. 27 per cent. of this work had been completed. 233,309 cubic yards of sand and clay had been removed from the entrance basin. Contracts were entered into for the supply of dock sluices, pumping machinery and caissons. The frames for four sluice doors were placed in position in the south wall during January, the remainder being due to arrive shortly. The pumping machinery and the caissons are expected to arrive shortly. Two 48 inch pumps arrived during January. 1923.

WITWATERSRAND DEEP.

The report of the directors for quarter ended 31st March, 1923, states, *inter alia*:—Total development footage, 1,068 feet; total footage sampled, 1,135 feet. Tonnage mined, 138,944 tons; tonnage milled, 136,830 tons; total yield, 38,156·825 fine ozs.; total yield per ton milled, 5·577 dwts. Working revenue, £162,799; per ton milled, £1 3s. 9d.; working costs, £132,579; per ton milled, 19s. 4d.; working profit £30,220; per ton milled, 4s. 5d.

Re East Rand Proprietary Mines, Ltd.—The outlook in regard to the continuance of mining operations on the East Rand Proprietary Mines is receiving careful consideration. There is no danger that the mining operations of the Witwatersrand Deep, Limited, will be in any way curtailed.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

SOUTH-WEST AFRICAN MINERAL INDUSTRY SUPPLEMENT.

Next week's issue will contain a special illustrated supplement dealing with the mines and minerals of the South-West African Protectorate. This will be a valuable and interesting feature, replete with numerous excellent photographs, and with special articles on the various mineral enterprises of the Union's Mandatory annexe.

It should prove invaluable to all who are in any way interested in the vast South-West African Protectorate, with its enormous and diversified mineral wealth.

ELECTRICAL SUPPLEMENT.

A special supplement dealing with electrical enterprises in the sub-continent will appear in the near future. This will embody many new features and will contain much valuable data of special interest to engineers and industrialists.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal will be leaving shortly for Rhodesia and Natal with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

Globe and Phoenix Company's Outlook.

At the meeting of shareholders of the Globe and Phoenix Gold Mining Company, Ltd., held in London the other day, the chairman said he thought the policy of setting aside a development reserve fund had been amply justified; indeed it had practically saved the situation. The ore reserves at the end of last year showed an improvement in tonnage and value, and the prospects were much more promising than for some years past.

* * *

Colliery and Coal Owners.

An important judgment affecting the coal trade in South Africa was delivered by Mr. Justice Krause in the Witwatersrand Local Division of the Supreme Court on Wednesday. The point arose in an application by the South Rand Exploration Company, Ltd., against the Transvaal Coal Owners' Association (1910), Ltd.

Mr. Justice Krause said: This is an application for the confirmation of a rule nisi granted on April 3, calling upon the respondent company to show cause, if any, why it should not be interdicted from passing a resolution, confirming the resolution already passed, to place the said Association in voluntary liquidation, pending an action to be instituted by the applicant company against the said Association for enforcement of a certain agreement and for other relief.

The nature of the action is set out in paragraph A (b) of the prayer in the petition as follows:—

> To compel the said Association and the co-adventurers of the South Rand Exploration Company, Ltd., to carry out the undertaking and obligation to secure the said South Rand Exploration Company, Ltd., an allotment for the supply of 17 000 tons of coal per month during the five years commencing July 1, 1923, in terms of the agreement of September 25, 1922

Although in the petition, as well as during the course of the argument, a great deal was said about co-adventurers and co-partners, it is as well to bear in mind that the Court is only called upon to confirm the rule granted against the respondent company, pending enforcement of the contract of September 25, 1922, entered into between the applicant and the respondent company.

In giving judgment Mr. Justice Krause stated: It is nowhere alleged that either the directors or a majority of the shareholders of the respondent company are attempting, by fraud or oppression, to deprive either the minority or the applicant company of their or its rights. I have not been able to find any valid ground which would entitle the Court to exercise its jurisdiction in restraining the respondent company from exercising those powers which it is in law entitled to exercise. There is no proof that the applicant company will suffer irreparable damage (see London and South African Exploration Company, Ltd., v Cresswell and Co., 2. H.C.G., 35), and, furthermore, I am of opinion that there is an adequate remedy by way of action for damages (see Gaisford v. Marais and Co., 1879, K., 3). In all the circumstances of the case I have come to the conclusion that the application should be dismissed, with costs.

Counsel in the above action were: For applicants: Mr Saul Solomon, K.C., and Mr. R. F. MacWilliam (instructed by Messrs. Bowman, Gilfillan and Blacklock). For respondents: Mr. L. Greenberg and Mr. O. D. Schreiner (instructed by Messrs. Webber, Wentzel, Solomon and Fridh.

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New States.

GOVERNMENT INSPECTOR'S REPORT.

The report by the Inspector of Mining Leases on the New State Areas for the year 1922 has the following, inter alia:—

A summary of the development work for the year is as follows:—Driving, 8,708 feet; winzes and raises, 11,872 feet; crosscuts, etc., 6,981 feet; total, 27,561 feet. Of the above total, 8,843 feet and 18,718 feet were accomplished at the north and south shafts respectively. Footage on reef, 15,821; footage sampled, 15,710; footage payable, 8,770 = 55·8 per cent.; average reef channel width payable footage, 27 inches; average reef channel value payable footage, 23·1 dwt. Compared with the previous year, the total footage developed shows an increase of 11,542 feet. The strike during the first quarter of the year adversely affected this increase. The percentage payable of the total footage sampled has increased from 50·2 per cent. to 55·8 per cent., and the average value has increased from 608 inch pennyweights to 624 inch pennyweights. At the north shaft both the percentage of payability and the value show a marked improvement, but at the south shaft there has been a falling off in both respects compared with the previous year. The main crosscut between the two shafts was connected up in July. The mine is being developed with a view to opening up the payable zones of ore preparatory to their stoping at such time as the reduction plant is completed.

The payable ore developed as at the end of the year is estimated as follows:—North shaft, 400,000 tons, value 8·4 dwt. over 68 inches; South shaft, 700,000 tons, value 8·6 dwt. over 68 inches; total and average, 1,100,000 tons, value 8·5 dwts. over 68 inches.

Beyond the above total there was a further 330,000 tons of ore of the same average value and width partially developed. In the above estimation of reserves the lowest pay limit has been taken at 4·5 dwt. over the stoping width. The ventilation of the mine will be effected by means of a double inlet Sirocco fan having a capacity of about 225,000 cubic feet per minute. This fan will be installed in a chamber above the main station of the north shaft, which will become the upcast shaft. Further headings are being pushed ahead to make a second connection between the two shafts, and when these are joined up the ventilation of the mine when stoping operations commence should be quite satisfactory. There is a considerable amount of rock at grass from the development faces, estimated at 382,000 tons, of which a large proportion is waste from development ends off the reef; the average value is therefore low, but with close sorting a fair tonnage will no doubt be recovered which would repay treatment costs and leave a fair margin of profit.

Good progress has been made with the construction of the reduction plant, and although considerable interruption was experienced during the strike period at the beginning of the year, the date on which it was estimated to have the plant ready for crushing will be very little, if at all delayed, and it is anticipated that preliminary operations will commence in May next. The plant will have an initial capacity of 50,000 tons per month. All the ore will be reduced to slime by means of crushers and tube mills, the usual method of crushing by stamp batteries being entirely eliminated. The gold will be extracted by the cyanide process only, and no amalgamation on plates will take place. As pointed out in my last annual report, the elimination of gravity stamps and amalgamation was decided upon as a result of experiments carried out at the Brakpan and Springs Mines, and this plant is the first wet crushing plant of any size to be erected in this country in which stamp mills for the intermediate crushing stage have been entirely abandoned. It is claimed that the elimination of stamps and amalgamation plates will not only effect a considerable saving in the costs of reduction when compared with those incurred in the running of the existing standard plants. Moreover, the elimination of amalgamation plates considerably reduces the risk of loss of gold by theft, which unfortunately is known by experience to frequently accompany this method of gold collection. As the design of the plant, together with the method of treatment of the ore, is a departure from the usual practice on these fields, the following short general description may be of interest. The ore from the two shafts will be delivered by rail to the receiving bins at the crusher station, from which it will be elevated by inclined travelling belts and tipped over grizzleys. The fines passing through the grizzleys are conveyed by belts direct to the tube bins, and the coarse, after being washed by sprays, is passed over sorting belts, where the waste rock is picked off and dropped into waste bins below the belts. At the same time pieces of clean ore of the desired size are selected and dropped into a separate bin. These are the pebbles which are subsequently fed into the tube mills. The ore remaining on the sorting belts is tipped into coarse crushers of the jaw type, which break down the rock to about 2½-inch cubes. This broken rock is again screened, the fines being fed on to the belt for conveyance to the tube mill bins, and the coarse passing to fine crushers of the disc type, which further break down the rock to about 1-inch mesh the product joining the fines on the belt from the coarse crushers; and as far as the crushing is concerned, this is the finished product. The ore from the tube mill bins is fed into the tube mills—of which there are thirteen in number, each 20 feet by 6 feet 6 inches diameter—and is ground up with the aid of the tube mill pebbles, which are fed on to the belts which deliver the ore into the tubes. At this stage cyanide solution is added and the process of gold extraction commences. The product of the tube mills is again screened, and the rejected pebbles, together with coarse grits, are collected. By this time the pebbles have become reduced to smooth spheroids up to about 1-inch mesh and are of little further use as grinding agents. They are conveyed by belt to "pebble crackers"—small crushers of the disc type—broken down, and again passed to the tube mill bins. The efficiency of tube mill grinding depends largely on the the jaggedness of the rock fed into it, the attrition being considerably reduced when the pebbles and coarse pieces of rock become rounded. The pulp from the tube mills goes to the Dorr classifier—one to each mill—these separate the sand, which is again returned to the mills for further grinding. The fine pulp or slime is pumped into collecting tanks, where settlement takes place. The slime is subsequently drawn off from the bottom of the tanks and delivered into Brown's agitator tanks, from whence, after agitation in cyanide solution, the slime is passed on to the Butter's filter press plant, where the cyanide gold-bearing solution is filtered out, and the slime after being washed is pumped to the slimes dam—the process being finished. To the gold-bearing cyanide solution, following its classification and de-aeration, zinc dust is added, and after contact the gold and zinc form a slime, which is separated from the solution by means of filter presses. The cyanide solution, now practically free of gold, is returned to storage tanks and brought up to strength for re-use. The zinc slime is reduced in the ordinary way and the gold bullion recovered. The foregoing precipitation process roughly described is known as the Merill Press Precipitation Process. By the elimination of plate amalgamation and the adoption of the Merill process, the gold is recovered in much shorter time, and there is therefore considerably less gold locked up in the plant.

The average number of white employees at work during the years was 218 as compared with 151 during the previous year. The average number of coloured labourers at work was 848 on surface and 1,037 underground, making a total of 1,885, as compared with 362 on surface and 644 underground, totalling 1,006, for the previous year. During the year 59,000 shares were converted from partly paid shares (2s. paid) to fully paid shares. The capital of the company is now fully paid up. Both surface and underground work made very satisfactory progress during that portion of the year undisturbed by the strike.

The Week in the Sharemarket.

A HEALTHY TONE—CORNER HOUSE STOCKS MARKED UP—INTRODUCTION OF ANGOLA DIAMONDS.

The gloom which overshadowed the market somewhat lightened during the past week. There has been a general recovery in prices, and one or two new interesting features have developed. The Corner House shares have all steadied up in price. Large business has taken place in Crown Mines, where at the end buyers remain more in evidence than sellers. Durban Deeps have been a steady market, and the report that a scheme will be launched to finance the Company by means of the issue of £100,000 of debentures has favourably affected the shares. This issue will clear the Company of debt and place it in a position to pay dividends. Modder B. have also recovered a fraction. City Deeps on good development had a substantial advance, and Nourse Mines for the same reason regained the ground lost last week. An additional tube will shortly be running at this property, and the general position at the mine is said to be satisfactory. All of the Anglo-American Group shares have been steady, with Brakpans favoured. West Springs Options have been bid for up to 4s. 4d., with no business. It is evident that there will be an interesting market in these options when they are available. Barnato stocks have been steady, Randfonteins only falling a little out of fashion for the moment. The unfortunate accident at the mine last week will, it is said, only very slightly affect the month's returns. New States, as the time for the starting of the plant approaches, display slightly more nervousness in price. Union Corporation stocks have been steady. There was some good business in Gedulds, and Modder Deeps had the usual quiet turnover. Of the General Mining shares, Transvaal Silvers were interesting, and have advanced a few points.

Diamonds have been steady. The feature in this market has been the introduction of Angola Diamonds, around 25s. It is said these shares will be brought on in London on Monday at an opening price of something like the same figure. In view of the financial interests sponsoring this introduction, there should be a good market in these shares, both here and oversea. Consolidated Diamonds remain steady. West Ends have had a lot of business without much change in price.

Tin shares have improved. The price of the metal is favourable, and it is said the market will hold. Zaaiplaats are reported to have encountered good development and there has been considerable business in the shares, which have marked a nice advance. Nothing of note can be said of Industrials. Oils are stagnant.

Loans have been more active. It is probable that a good deal of money taken from the market during the recent drop found its way into these more steady investments. Reserve Banks have been firm about £142.

Altogether the week has been a satisfactory one for the market. With the least encouragement business shows signs of broadening. The improved position oversea in response to the satisfactory Budget will no doubt slowly reflect on conditions here. The anticipated activity will probably come from London, where our money is, and the abundance of capital there seeking outlet must be attracted by the dividends and probable capital increase which South African shares offer to-day.

	Fri. 13th.	Sat. 14th.	Mon. 16th.	Tues. 17th.	Wed. 18th.	Thur. 19th.
Anglo-Am- Corp.	26 6	26 6*	26 6*	26 6*	26 9	26 3
Apex Mines	6 0*	6 0*	6 0*	6 0*	6 0*	6 0*
Brakpan Mines	70 0*	70 9	71 0	70 9*	71 0*	70 6*
Brick and Potteries	2 6*	2 6*	2 6*	2 6*	2 6*	3 0*
British South Africa		11 6*				
Bushveld Tins	0 3*		0 4*	0 3*	0 3*	0 3*
Cinderella Cons.	4 0†	4 0†	4 0†	4 0†		4 0†
City and Subs.	3 0†		3 0†		2 11*	
City Deeps	49 6	50 6*	52 4	52 3	51 9*	51 9*
Clydesdale Colls	17 6†	17 6†		17 6†	17 6†	17 6†
Con. Diamonds	25 3	26 0	26 0	25 7½	25 4*	25 6
Con. Investments		28 0*	27 6†	27 6*		29 6*
Con. Langlaagtes			13 6†	12 6*	13 0	13 0*
Con. Main Reefs	9 7	9 6*	9 9	9 9	9 7½	9 4*
Coronation Colls.		22 6*			21 6*	21 6*
Do. Freeholds	0 9†	1 0†	0 10†	1 0†	1 0†	0 6*
Do. Syndicates	7 0*	7 0	7 0	6 9*	7 5	7 6
Crown Diamonds	6 10	6 10	6 10	6 10	6 9*	6 9
Crown Mines	53 0	53 6	53 3	53 0	53 3	53 3*
Daggafontein Mines	3 3*	3 3*	3 3	3 3	3 1	3 1*
Durban Rood. Deeps	16 6	16 10*	17 6*	17 3*	17 0*	16 9*
East Rand Coals	1 4*	1 4*	1 4*	1 4*	1 4*	1 4*
East Rand Deeps	0 9*	0 8*	1 0†	0 8*		0 8*
East Rand Minings		9 6*	10 6†	10 6†		
East Rand Props	5 6*	5 9	5 9*	5 6*	5 9*	5 10*
Eastern Golds	0 6*	0 6*		0 6*		0 6*
Ferreira Deeps		8 0†	8 0†		6 0*	6 6*
Frank Smith Dmds	4 1*	4 0*	4 1	4 1		4 0*
Geduld Props.	63 9*	63 9*	64 0*	63 9	63 6*	63 0
Glynn's Lydenburgs				13 6*		
Govt. Areas	108 6*	109 6	109 6	110 0	109 9*	109 9
Hume Pipes	8 3*	8 9	8 0*	8 6*	8 6*	8 10*
Knight Centrals	5 2*	5 2*	5 2*	5 3*	5 4	5 4
Lace Props.	8 6*			10 0†		
Langlaagte Est.	19 3	19 3*	19 3*	19 3*	19 7½	19 6
Leeuwpoort Tins	3 6*	4 6	4 4½	4 6*	4 0*	3 9*
Luipaardsvlei Est.	4 0†				4 3	4 6*
Lydenburg Farms	3 0*	3 1*	3 1*	3 1*	3 1*	3 6†
Middelvlei Est.	2 0†	1 3*	1 9†	2 0†	1 9†	1 9†
Modder B.'s	23 6	24 0*	24 3	24 3	24 3	24 0
Modder Deeps	43 6*	43 9	43 6*	44 0	43 9	43 9
Modder Easts	7 3	7 4½	7 4*	7 0*	7 0*	7 1
National Banks	180 0					
New Eland Dmds.	49 0	49 0*	49 0*	51 0†		47 6*
New Era Cons.	6 9	6 6*	6 6*	6 9*	6 9*	6 9*
New Kleinfonteins	—	5 0*			4 9*	5 0†
New Modders	78 6*	78 6*	78 0*	78 3*	78 3*	78 3
New Primrose	—				3 0*	
New Unifieds	3 0†					
New State Areas	38 9	38 6	38 6	38 3*	38 6	38 0*
Nigels	8 6*	8 3*	8 0*	8 3*	—	
Nourse Mines	14 6*	14 6		15 3	16 0	15 6*
Pretoria Cements	42 3*	42 6	42 0	41 6*	41 9*	42 0*
Rand Nucleus	0 9*	0 9*	0 9*	0 10*		0 10*
Randftn. Central	14 9*	14 9*	14 9*	14 6*	14 6*	
Do. Estates	22 7½	22 7½	22 4½	22 6	22 6	22 4*
Rouxville Diamonds	1 4	1 4*	1 4*	1 3*	1 4*	1 4*
Roberts Victors	—	10 0†				10 0†
Robinson Deep "A"	32 6	32 6	32 6	32 3*	32 6	32 0
Robinson Deep "B"	12 0†	12 0†	10 6*	12 0†	11 0*	11 3*
Rooibergs	3 6*	3 0*	3 9*	4 0		
Ryan Nigels		4 0†				
Shebas		3 6		—	—	—
Simmer and Jacks	3 1	3 0*	3 2	3 1*	3 1*	3 2
S.A. Breweries		29 6*	30 0*		30 0*	30 0*
S.A. Lands	5 7	5 9	5 9	5 11	5 9*	5 9*
S.A. Reserve Bank	£141†	£140		£142†	£139*	£142†
Springs Mines	43 3*	48 6	48 6*	49 0	48 3*	48 6
Sub Nigels	9 4*	9 4*	9 6*	9 7*	9 6*	9 6*
S.A. Alkali	15 6	15 6†	15 3	15 6	15 0*	15 6
S.A. Townships	11 3*	11 3*	11 6	11 4*	11 3*	11 9†
Transvaal Lands			17 6†	17 0†		
Transvaal G.M. Est.	8 3*	8 3*	8 6*	8 3*	8 3*	8 4*
Transvaal Silvers	13 9*	14 3*	15 6	15 3	14 6	14 0*
Tudors	0 3*	0 3*	0 3*		0 6†	0 3*
Union 5 per cent	£104	£104½*	£104	£105	£104*	£104*
Van Dyks	—	1 0*			1 0*	1 0*
Van Ryn Deeps	69 6*	69 6*	69 3*	71 0	70 6*	70 3*
Van Ryn Estates	14 3*	14 6*	14 6*	—		
Village Deeps	12 0	11 6*	12 3	12 0*	12 6	12 3*
West Springs	19 6	19 3	19 3	19 3	19 3*	19 3
West Rand Cons.		5 0*	5 0*			7 0†
Western Rand Est.	3 8*	4 0†	3 11	3 9	4 0†	3 11†
Witbank Collieries	31 0	31 3*	31 0*	31 0*	31 0*	31 0*
Witwatersrands	15 6†	15 6†	15 6†	15 6†		
Wit. Deeps	16 10½	16 9*	17 0	17 3	17 1*	17 3
Zaaiplaats Tins	3 1*	3 3*	4 6*	4 6*	4 3	4 8

* Buyers. † Sellers

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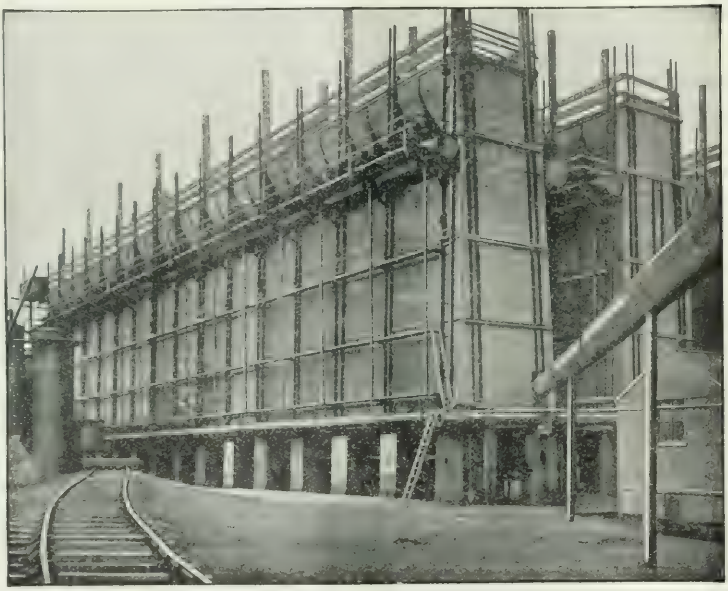

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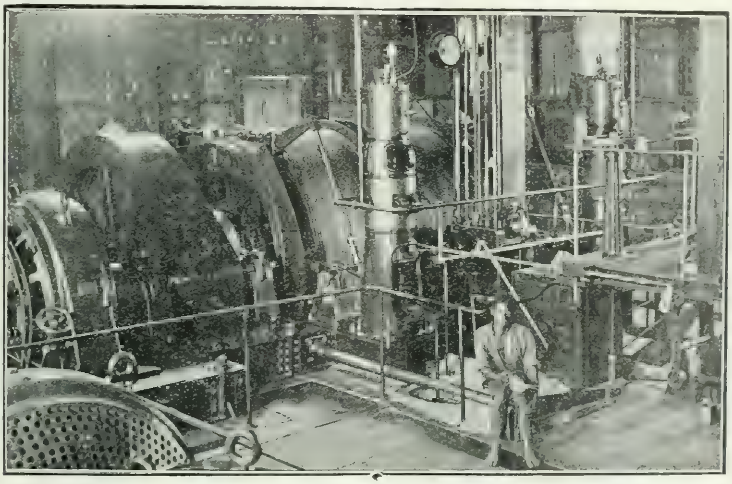
ENGINEERING SECTION.

The Future of Our Iron and Steel Industry.

WILL PHYSICAL AND ECONOMIC DIFFICULTIES PROVE INSUPERABLE ?—A HOME CRITIC'S PESSIMISM.

From a very outspoken article in the *Investors' Chronicle* we take the following review of the iron and steel-making prospects of South Africa, Canada, Australia and India, which certainly provides food for thought:—

We read from time to time of iron, steel and engineering enterprises in the Colonies and Dependencies, and the reports are invariably accompanied by assertions, or predictions, that the young Commonwealths will in a very few years not only meet all their own demands for steel products, but that they will actively compete with the old country for trade in neutral markets. According to many people, Britain is always just about to be beaten by some nation—America, Germany, Canada, Australia or India—even by little Belgium! Really, we ought to look at trade matters in true focus. Let me give a brief account of these Colonial steel enterprises.



Hoist at Block A. Randfontein.

They have had free or cheap land. They have had remissions of taxation. They have had bounties and subsidies. They have had tariff protection. They have had guarantees of Government support in various ways. They are alleged to have inexhaustible reserves of raw material on the spot. They have been loudly advertised. But what progress have they made, and what progress are they likely to make? I have tried over and over again to explain that things are not what they seem. In spite of all we hear, the fact remains that these Colonial steel enterprises are beset with physical and economic difficulties not to be found in the old country, or in the other two big steel countries—America and Germany.

There is no intention here to belittle our Colonies. Their enterprises are laudable enough. They are important enough. The resources of these Colonies may be all that they are pictured. But in some vital respect or other there is something lacking.

Canada.

Take Canada. Ever since 1882 the production of iron and steel has either had bounties or high tariff protection, or both. The minerals are there in abundance. We have been told that Canada would be a second United States in the steel trade. Six years ago we were told that within five years Canada would be making 10,000,000 tons of steel a year. I challenged that view. Now, in 1922 Canada has not produced anything like half a million tons. Canada continues to import steel on a heavy scale, in spite of years of effort to make herself independent of outside supplies, and in spite of 40 years of subsidisation and protection.

Australia.

Look at Australia. Before, during, and since the war we have been told all about Australia's rich iron ore and her big coal reserves. British and other capitalists have started huge works, and the Government has granted generous assistance. But within the last few months it has been openly confessed in Australia that British and American steel products can be imported, cost, freightage and tariff included, at about £2 a ton cheaper than they can be produced in the Commonwealth; the biggest of the Australian works have been closed down; and how or when the steel economy is to be revived is a puzzle. Meantime, Australia wants a big volume and wide variety of iron, steel and engineering products. There is a big market for British goods. In 1913 Australia took £21,000,000 worth of our products in this line, and to-day the market is enormously larger.

South Africa.

Next there is South Africa. The engineers and other experts have told us that our raw material reserves are nearly exhausted, whereas South Africa holds more rich ore than any other country except Brazil, and that the Union has plenty of coal. They have told us that South Africa can produce the cheapest pig iron in the world. But what has been done? And what is going to be done? The Pretoria iron mines plant is, or was very recently, idle. The Newcastle (Natal) iron and steel works are closed down. The South African Iron Corporation cannot get enough capital to carry out its schemes. The Union Steel Corporation finds it almost impossible to produce pig iron, and it has to rely almost entirely on scrap for it's steel production. The South African and other Colonial steel works were highly useful during the war, but the economical production of steel goods in normal times is another proposition. To-day it is openly admitted that these enterprises cannot go on unless they have more State favours, and a Bill has been introduced to provide bounties until 1932, when it is hoped the industry will be able to stand on its own legs. Meantime the steel requirements of South Africa are put at 500,000 tons a year, notwithstanding the small white population. There is a market for the products of the old country.

India.

Finally, there is India. There are two very large, and two or three smaller, iron and steel plants in India. A Government plant is being completed. The big Sheffield firm of Cammell Laird has associated itself with an Indian company for the erection of a large steel plant in the Dependency. This has given rise to the usual crop of predictions about the old country going to have another formidable rival in steel. Well, let me point out that India, with her tremendous population, enjoying an unprecedented prosperity, is going to be a huge market for steel products. Her railways will be vastly extended in the coming years, and other big steel-consuming schemes are on hand. But no steel works that India possesses or proposes to erect will half meet the demand, much less offer products in competition with ours in outside markets. The necessary iron ore is there, but the coal is not. A few years ago India managed to produce 22,000,000 tons of coal in a year. Since then the output has gone down, and is not likely to go up. A thorough investigation into India's coal reserves has been made, and when the report is out it will be seen to be a gloomy document. With the growth of railways, of cotton factories, and of shipping, the coal problem in India is going to be the biggest of problems. Any great expansion of the steel industry will be arrested by shortage and high cost of fuel. Besides, there is the almost insoluble problem of labour. Since India attained her new agricultural prosperity—thanks largely to British irrigation schemes, British railways and ships, and the British market—it has become increasingly difficult for the industrial enterprises already established to obtain supplies of labour. Indian labour is not suitable for ironworks. It has been found already that the labour of a factory changes entirely every three years. The men will not stay away permanently from their farmhomes. It seems to be that all idea of India becoming a great steel rival may be dismissed on the grounds of inadequate fuel and labour supplies and unsuitable climate for hot and heavy forge work.

HONOURING SCIENCE AND INVENTION.

For many generations munificent contributions have been made by wealthy men in Great Britain to the cause of scientific research. The latest addition to this illustrious catalogue is the gift of £100,000 by the famous shipbuilder, Sir Alfred Yarrow, to the Royal Society of Great Britain. This sum is for the endowment of research in science and industry. Recently some notable awards have been made by British scientific institutions in recognition of distinguishing work in various directions. The Bessemer gold medal of the British Iron and Steel Institute has been awarded to Dr. Maw, LL.D., who is 85 years of age and is now President of the Institution of Civil Engineers. The Institution of Electrical Engineers has awarded the Faraday medal to Sir Charles Parsons for his pioneer work in connection with the invention of the steam turbine, which has revolutionised the production of electric power and the propulsion of large vessels.

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RHODESIAN SECTION.

Mineral Activities in Northern Rhodesia.

THE C.V. SYNDICATE AND THE RHODESIAN-CONGO BORDER CONCESSION—A PLANT FOR THE MINE.

Stimulated no doubt by the recent substantial rise in the price of copper and by the generally better outlook for base metals, there is a great deal of prospecting activity in Northern Rhodesia at the present, and it is being conducted on proper business lines, and scientifically. This activity is apart from the expanding operations at Broken Hill and the development of the Bwana M'Kubwa copper property. Some interesting information on the subject is given by the "Livingston Mail," which recently has been discussing the prospects of the northern territory. The "Mail" in a recent issue says: During the last election campaign candidates insisted on the necessity of throwing open the country to mineral development, with a view to providing markets. The answer, or so it seemed, was a couple of Government notices reserving the pick of the country. Many thought this a manoeuvre to defeat the reference of the Company's claims to the Judicial Committee of the Privy Council; it was argued that even if the Company did not own the minerals they certainly had the right to sell, lease, or otherwise dispose of them. What is being done by the Colonial Office no one seems to know

Activities of the "C.V." Syndicate.

Whatever the ultimate aim of the Company in their dealings with the British Government, the reservation of these mineral areas appears to have had a practical object. The "C.V." Syndicate (C.V. Copper Ventures) and the Rhodesian-Congo Border Concession are about to develop them, and it is hardly to be expected that any group of capitalists would put up money for such a purpose unless assured of the fruits of their enterprise—hence the reservations. The C.V. Syndicate is operating in the area north of the Kafue, which includes the Allies Mine; the Rhodesian-Congo Border Concession in that which includes the N'Kana property. Mr. Horner, well-known in this country and the Katanga, arrived yesterday, accompanied by Mr. James and Mr. Brooks; next week five fully qualified engineers and as many prospectors—a sort of advance guard—are expected, and operations will commence immediately. These, with suitable equipment, will proceed in different directions and thoroughly prospect the three areas. Private prospection, that is prospecting undertaken at their own charge by those not in the employ of these two syndicates,

The Broken Hill Smelter.

will not only not be prohibited but will be encouraged, and the rewards the syndicates are prepared to pay for discoveries will be abundant. The engineers will give technical advice and assistance. Although the syndicates anticipate that development will take the form of copper mining, they are on the look-out for any minerals. We are satisfied that they are not "out to work any injustice towards the prospector," and the writer is inclined to regard the whole matter with much less suspicion than the attitude of the Chartered Company at first aroused.

The Rhodesian-Congo Border Concession.

A few details may be of interest. The Rhodesian-Congo Border Concession, recently floated in London, with a capital of £[illegible], is being directed from N'Kana by Mr. H. [illegible]. The C.V. Syndicate will have its headquarters at the Allies Mine, under Mr. C. G. James. The N'Kana Concession, under J. W. Bryant, at N'Kana, near N'Dola. Between them they will spend about £35,000 this year on prospection, and if anything justifying operations is encountered extensive development will no doubt be undertaken. At the Allies Mine a plant, capable of treating 50 tons a day, will be erected this dry season; at the N'Kana Mine two engineers are at work with a drill.

It will generally be conceded, we think, that the above details do not support any contention that the country is being "locked-up." It matters little to the general public who owns the minerals, so long as they are developed expeditiously and profitably. Capital is entitled to its interest, and when speculatively employed, to high interest. To deny this proposition is, in effect, to lock the country up permanently.

From various sources a few other items have come to our knowledge. Many of these may be generally known but may not have reached the ears of a few. An experimental plant is on the way out for the equipment of the Bwana M'Kubwa Mine; this property is not in any way identified with either of the two syndicates above referred to, nor is the Broken Hill Mine. So far as we have been able to ascertain, there is not the slenderest foundation for the rumour that the Lobito Bay line is to be diverted to join up with the Northern Rhodesia railway system, but Mr. Robert Williams arrived in Bulawayo last Tuesday, is passing through on Sunday *en route* to the Katanga, and something definite may transpire shortly.

The Cement Industry in America.

SOME INTERESTING STATISTICS.

The following figures, obtained from the Reports of the United States Geological Survey and from *The Mineral Industry*, reflect some of the outstanding features of the cement industry in America during recent years.

PRINCIPAL HYDRAULIC CEMENTS SHIPPED FROM FACTORIES IN THE UNITED STATES

1919

Class.	Quantity (Barrels).	Value.
Portland	85,612,899	$146,734,844
Natural Puzzolan	528,589	$583,554
Total	86,141,488	$147,318,398

1920.

Class.	Quantity (Barrels).	Value.
Portland	96,311,719	$194,439,025
Natural Puzzolan	767,481	1,150,890
Total	97,079,200	$195,589,915

1921

Class.	Quantity (Barrels).	Value.
Portland	95,507,147	$180,778,415
Natural Puzzolan	539,402	897,025
Total	96,046,549	$181,675,440

STATISTICS SHOWING FUEL USED IN BURNING PORTLAND CEMENT.

1920

Fuel	Number of Plants	Number of Kilns	Barrels.	Percentage of Total
Coal	96	629	81,265,667	81·2
Coal and oil	1	24	6,676,029	6·7
Coal and gas	1	6		
Oil	16	79	9,495,798	9·5
Coal, oil and gas	2	9	2,585,751	2·6
Natural gas	1	6		
Total	117	753	100,023,245	100·0

1921.

Fuel.	Number of Plants.	Number of Kilns.	Barrels.	Percentage of Total.
Coal	92	607	80,557,675	81·5
Coal and oil	3	31	5,536,128	5·6
Coal and gas	1	6		
Oil	16	81	10,123,781	10·2
Coal, oil and gas	2	9		
Natural gas	1	6	2,624,465	2·7
Total	115	740	98,842,049	100·0

IMPORTS OF FOREIGN CEMENT INTO THE U.S.A., IN BARRELS OF 380 LB.

1887	1,511,095	1899	2,108,388	1911	164,670
1888	1,835,504	1900	2,386,683	1912	68,503
1889	1,740,356	1901	939,330	1913	85,470
1890	1,940,186	1902	1,963,023	1914	120,906
1891	2,988,313	1903	2,251,969	1915	42,218
1892	2,440,654	1904	968,409	1916	1,836
1893	2,674,149	1905	896,845	1917	2,323
1894	2,638,107	1906	2,273,493	1918	302
1895	2,997,395	1907	2,033,438	1919	8,454
1896	2,989,597	1908	842,121	1920	498,036
1897	2,090,924	1909	143,888	1921	121,030
1898	1,152,861	1910	306,863		

EXPORTS OF CEMENT FROM THE U.S.A., IN BARRELS.

Year.	Quantity.	Value
1904	774,940	$1,104,086
1905	897,686	1,387,906
1906	583,299	944,886
1907	900,550	1,450,841
1908	846,528	1,249,229
1909	1,056,922	1,417,534
1910	2,475,957	3,477,981
1911	3,135,409	4,632,215
1912	4,215,532	6,160,341
1913	2,964,358	4,270,666
1914	2,140,197	3,088,809
1915	2,565,031	3,361,451
1916	2,563,976	3,828,231
1917	2,586,215	5,328,536
1918	2,252,446	5,912,166
1919	2,463,573	7,513,389
1920	2,985,807	10,045,369
1921	1,181,014	4,276,986

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS STILL QUIET—IRON AND STEEL—BUILDING AND TIMBER MATERIALS—METAL QUOTATIONS.

General.

The week under review has been extremely quiet in respect of general mining business, the reason for which merchants are unable to explain. As a matter of fact, the Rand's trading conditions have been more or less stationary for some weeks past when, according to prognostications, we should have steadily forged ahead. Perusal of the reports of some of our leading gold mines would certainly have led most people to look for some improvement in business conditions occurring about this time. These reports are distinctly encouraging regarding results obtained by the gold mining industry during the second half of 1922, and promise even better profits for 1923. In conversation this week with leaders in the commercial world there seemed to prevail an impression that the mines were still waiting for reductions (in railage or otherwise) to take place, which would decrease their working costs, before departing from their present and past conservative policy of purchasing. In the opinion of some influential firms, however, the mines to-day are buying not at all niggardly, and the present dearth of business is caused solely by the big addition to the ranks of caterers for supplies in recent years.

In the meantime we are without any light as to the trend of European politics; it is impossible for us here to form any judgment as to the immediate future, and we must therefore await more settled conditions before we can hope for fresh capital to exploit and develop our resources. The general opinion in commercial circles is that until European affairs become more settled we cannot hope for any decided improvement in local business.

Iron and Steel.

An iron and steel magnate called upon this week said things had been remarkably quiet, which he could not altogether account for. This statement was confirmed all round; at the moment there is little activity in the market.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s., cheques plates, 27s. 100; lb.; imported flats, ½ x 3-16, ⅝ x ⅛, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. lb.; phosphor tin, 2s. 9d. lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 32s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 7s. 6d. to 39s. 9d. each; barbed wire, "Shorthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Union Steel Corporation (S.A.), Ltd.

This important local industry is now very busy; prices (in consonance with Home quotations) are firming.

Britain: Mail Advices.

Most manufacturers in the iron and steel market in the middle of March report a large inquiry, only a small portion of which has materialised into actual business, owing principally to the rapid advance in prices. In the majority of cases the British works are booked up for three or four months, and are therefore in a position to adopt an independent attitude. Continental producers are, to all intents and purposes, still out of the market. Supplies from America seem to be discontinued on account of price.

On the London Iron and Steel Exchange in mail week it was reported that there was a general difficulty in placing orders for near delivery in all departments. Some of the British works now decline to quote, having booked up as far ahead as they feel disposed to go.

The most important feature of the iron and steel market to-day, says *The Ironmonger* in mail week, is the scarcity of pig iron, which has resulted in an advance in foundry iron from £4 10s. at the end of the year to £6 5s. per ton at mid-March. The present situation could not have been foreseen at the end of last year any more than the world shortage which has followed the French occupation of the Ruhr could have been guarded against. Unfortunately the British pig iron industry is unable to except the many large contracts which, owing to the advance of the Continental industries, have been offered to it. The British pig iron production in February was 543,400 tons. This shows an improvement of about 7 per cent. upon the daily output in January, but it also indicates that British furnaces are only turning out 70 per cent. of their capacity. The principal cause of this moderate output is the lack of an elemental demand or the scarcity of coke, the output of which, compared with the possible, is still abnormally very low. One of the first results of the Ruhr occupation was to create a large Continental demand for British coke, at prices considerably above those which Home consumers were willing to pay. It is obvious that the Continent cannot continue to pay the prevailing high prices for British coke and produce pig iron at an economic figure, especially as coke deliveries are considerably delayed during the journey to the Continental blast furnaces. Quoted prices give little indication of the actual position. There is a remote possibility, however, that American pig iron will become available in Britain at no very distant date. But it may take some time before America is in a position to supply large quantities of pig iron to Europe.

Wholesale Prices.

The Board of Trade index number shows an increase of 0·3 per cent. in the level of wholesale prices in February compared with the average for January, following an increase in January over December of 0·9 per cent. Iron and steel were dearer by 4·8 per cent., and other metals and minerals by 2·7 per cent. The index number for all articles now stands at 157·6, the figures for iron and steel and other metals and minerals being 140·4 and 142·0 respectively. For many years past Sheffield has supplied practically the whole of the hollow steel bars for making the drills used on the Rand mines, but lately a good deal of this trade has been done by Swedish makers, who have under-quoted. The Rand mining officials, however, have a strong preference for the British material, and for this reason the competition is not regarded as a permanent menace in the South African market. Owing to the desperate state of the iron and steel trade in Sweden at the moment the makers there are prepared to sacrifice immediate profits to secure work.

Quotations.

Staffordshire common bars 14s., galvanised corrugated sheets 23s. per cwt.

Tinplates.—Basis price, 20 by 14, 26s. to 26s. 6d.

Wire Nails and Sheets.—Galvanised wire in 4-cwt. lots; fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 70 rings, 8-gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt. Wire nails, 9 to 7 gauge, 21s. per cwt.; cut sheet nails, 3in. to 6in. clasp, ex works, in two ton lots, 19s. 6d. per cwt. Galvanised corrugated sheets, 22 to 24 gauge, 23s. per cwt. The output of steel ingots and castings in February amounted to 707,100 tons, which is the highest output attained since December, 1920, and is higher than the rate of production in 1913.

Tinplates.—This market has been strong, and has advanced to 24s. for 20 by 14 basis f.o.b. Swansea. The advance in the price of tin and the stringent position in steel have given rise to the belief that further advances are likely, and holders of tinplates are disinclined to sell freely at the moment.

Pig Iron.

Cleveland.—Foundry No. 1, 130s.; No. 4 forge, 122s. 6d.; mottled, 115s.; hematite, mixed Nos., 122s. 6d.; No. 1 G.M.B. (Scotland), 123s. 6d.; No. 3, 118s. 6d.; hematite, f.o.t. Steelworks, 120s.

Finished Iron and Steel.

Iron.—Crown bars, £12; best bars and angles, £12 10s.; tees, £13.

Steel.—Billets, soft, £10, hard, £10 10s.; bars and angles, £9 10s.; tees, £10 10s.; joists and channels, £9 15s.; sheets, £14 10s. to £15 10s.; plates, ship, £10, boiler, £11; rails, £10 10s.; flat steel sheets, 22 to 24 gauge, galvanised, 27s. per cwt.; black, 20s. per cwt. Bolts and nuts 50 per cent. discount.

Pig Iron.—The production of pig iron in February amounted to 543,400 tons, or 24,500 less than in January, but the average daily rate of production was about 6 per cent. higher than in January. The furnaces in blast at the end of February numbered 189, an increase of six during the month. The production included 174,000 tons of hematite, 184,800 tons of basic, 125,900 tons of foundry, and 30,300 tons of forge pig iron.

Oils and Paints.

Motor spirit, 1s. 7d. to 2s. 2d. in cans; linseed oil, 3s. 10d. raw, 4s. 1d. boiled; gas engine oil, 2s. 7d. to 2s. 8d.; machine oil, 2s. to 2s. 1d.; separator machine oil, 2s. 7d. to 4s.; colza (fine), 4s. 10d. to 5s.; petroleum, 1s. to 1s. 2d. per gallon; paints, in 5-cwt lots, 74s.; red lead, 42s. to 42s. 6d.; white lead, 47s. to 54s. 9d.; zinc oxide, 45s. to 51s.; turpentine, 9s. 5d. to 9s. 7d.

Furnace Restarting.

Bolckow, Vaughan and Co., Ltd., are restarting a seventh Teesside blast furnace, making 45 now on the north-east coast.

Pig Iron Dearer.

Scarcity of coke has restricted the output of Cumberland iron, and the ascertainment price of hematite pig iron, mixed numbers, shows an increase of 2s. per ton as compared with the previous month's price. The new ascertainment price is 96s. 6d. per ton. The January and February ascertainment shows that the average selling price of mixed numbers of best coast hematite pig iron was 95s. 7d. per ton, an increase of 3s. 4d. over the December ascertainment.

United States.

Pig Iron.—Prices have advanced by $1 to $1.50. No. 2 Northern foundry is quoted at $57 Birmingham, and No. 2 foundry, Bessemer and basic ore quoted at $30 Western Pennsylvania and Buffalo. The price of heavy steel scrap has advanced to $36 Pittsburg. The output of pig iron is steadily increasing, and now exceeds the rate of 40,000,000 tons per annum.

Steel Production.

The production of steel ingots in February was 2,919,017, which is at the rate of 44,000,000 tons per annum.

Steel Corporation.

The unfilled orders of the United States Steel Corporation at the end of February increased 323,213 tons to 7,283,989 tons, which is the heaviest since January, 1921. The entire steel trade is operating at 89 to 92 per cent. of capacity.

A company has recently been formed, under the title of the Metal Sales Corporation, to market the production of the Anaconda Copper Mining Co., and the more important copper producers of the United States.

Germany.

Business relations between the iron industry in the Ruhr Valley and its customers in the unoccupied area of Germany have, of course, been cut short by the French occupation. But this notwithstanding, up to mid-March the iron works in the occupied area have, it is stated, managed to get the necessary fuel and to keep their mills going. It is calculated that about 2,000,000 tons of iron and iron products are now lying ready for immediate delivery after the raising of the customs-barrier set up by the French unless they have meanwhile been confiscated by the French.

It is known that steel companies are piling up vast quantities of manufactures, and it remains to be seen how markets will react when stocks are released.

The Bochum Steelworks Verein, in their report for the year ended September 30, 1922, accounce a net profit of 76,210,000 marks, against 35,610,000 marks in the previous year. A dividend of 90 per cent. is to be distributed on the capital of 70,000,000 marks, compared with 30 per cent. in the preceding year. These figures, of course, all refer to paper marks. The company's output, it is stated, shows an increase, and during the year the export trade was resumed. It is announced that a Manneshcim' tube plant has been completed, while a Martin steelworks in under construction.

Second-hand Machinery Market.

This has been very active during the past week or so, but there is a big scarcity of all kinds of material; a few weeks ago there were a lot of tanks for sale, to-day there are very few, in fact the requirements of a small gold concern that has recently started up again could not be placed amongst second-hand dealers, and new tanks therefore had to be bought. This applies to many spares now being purcrased by the companies. Battery spares are practically sold out. 30 h.p. local boilers are a scarcity just now, as an order which has been operative for some time for a pair cannot be executed. Several lots of machinery have recently been purchased from concerns in outlying districts and brought to Johannesburg. In new steel plate a lot of business has of late been done. One firm of second-hand dealers in town, which inported a very large quantity during the last six months at a low price, is doing practically the whole trade in new plates, owing to second-hand descriptions being unprocurable. Companies will always purchase second-hand when obtainable, especially when it is for maintenance. The market, said a leading dealer, this week, is active, but, as above stated, many orders that could have been executed a few months ago have had to be passed over on account of shortage of stocks.

Building and Timber Materials.

Business in the timber trade has, according to a leading merchant, been quite satisfactory during the past week, and, indeed, during the past month; and although nothing outstanding has to be reported, steady progress has been made. Many big contracts are imminent and sooner or later they must be released. Building operations are fairly good; there are at the moment no big contracts out, but the "bits," to give a builder's phrase, are by no means to be despised. Builders report that employees are fully employed. Corrugated iron, which has for some time past been 8¼d. to 8¾d., has risen to 9d., and is likely according to all accounts, to go higher.

Stocks of timber are quite fair. Prices of same and of bricks are as quoted:—

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10¼d.; beaver boards, 3⅞d.; floorings, 6d. to 6¼d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d; corrugated iron, 8¼d. to 8¾d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft. 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12in., 6s.; 15in, 7s. 6d.; 18in., 9s.; dry red oxide, 14s. per 100lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

Second-hand Iron and Timber.

The yards generally report a slight improvement in business conditions—not much, but what may be called, in comparison with the past few months, a very fair advance. Building operations are going on at an encouraging rate, and dealers are looking forward for good business in the early future. Prices remain about the same, viz., iron about 7d., timber 8d.

Electrical Goods.

Dealers this week report very much better business than for some time past. The building trade, of course, accounts for some of the optimism of electrical merchants, but there can be no doubt that electrical activities are now more apparent than for some time past. Prices locally and oversea are at present unchanged.

London Metal Quotations, March 16.

Standard copper, £73 10s. cash, £74 2s. 6d three months; electrolytic, £81 seller's option, £81 5s. buyer's option; copper wire bars, £81 5s.; standard tin, £212 2s. 6d. cash, £214 10s. three months; foreign lead, £27 7s. 6d. prompt, £27 10s. forward; quicksilver, £10 5s.; bar silver, 32¼d.; bar gold, 88s. 7d. per ounce.

SOUTH-WEST DIAMONDS.

The Secretaries report operations for the month of March as follows:—Cubic metres mined, 2,010; cubic metres treated after sifting, 378; number of stones won 1,326; carats, 217·65.

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Liquid Oxygen in Mining[*]—II.

By Alfred James, M.I.M.M.

The plant at the mine in question produces 27 lit. of liquid oxygen per hour at a low cost.

The liquid oxygen is conveyed from the place of manufacture to the mine in the special flasks referred to above, and at the actual firing place is poured into vase-shaped containers holding six cartridges. The latter remain immersed for five or ten minutes, and are then deftly and rapidly inserted into the drilled holes, and are fired with ordinary detonators. Electric firing was insisted on by the contractors installing the equipment, but was subsequently deemed unnecessary practice, and less convenient than the use of ordinary fuse and detonators.

The blasting is good, the rock being well shattered, and the percentage of misfires less than with ordinary gelatine dynamite.

With practice it is possible to fire 18 or more holes at a time. The limiting factor is the evaporation of the oxygen. The cartridges are made on the spot, and consist of lamp-black in paper containers; various other materials are being experimented on. The essential point is to have the carbon in such condition as to absorb and retain much oxygen, the retentive capacity being limited by the diameter of the cartridge. Taking a normal cartridge 1 2-5 in. (35 mm.), this retains the oxygen—in excess—for 14 minutes, whereas sawdust cartridges are available during only 3 minutes to 4 minutes. The prevailing factor is the size of the hole; used with larger holes the thicker cartridges would have greater (longer) retaining capacity; the longer the retaining capacity the greater the number of holes which can be loaded and fired at one operation.

It is essential that the cartridge absorb more oxygen than the chemical equivalent needed for the reaction. It must retain an excess more than sufficient for the reaction, otherwise the very poisonous CO would be formed instead of CO_2. In practice the absence of fumes, easy and quick access after firing, the coolness of the atmosphere, the innocuousness of a "missed" hole, which, after 15 minutes, is charged only with harmless soot, all prove attractive to the miners, who, scorning gloves and tongs, handle the super-cool cartridges with freedom and dexterity.

Actual experience impresses one with the workableness of the explosive, its efficiency, and the fact that the miners like it.

At the outset the new explosive appeared to cost only one-half as much as dynamite at 12c. per lb., the cartridges forming one third of the total cost; but later on, with repairs, renewals and replacements, the figure rose to 65 per cent. Probably 75 per cent. will be a safe figure over long-continued use.

The amount of liquid oxygen produced is three times that theoretically necessary. This allows for evaporation in transit and for the waste in the immersers and for the excess in the cartridge. In practice 2 by weight of liquid oxygen generated equals 1 of 40 per cent. dynamite (gelignite). The strength and shattering quality of the explosive may be varied as desired, within limits, by modifying the constitution of the cartridge.

The blasting is carried out by ordinary miners without supervision from any imported expert; the liquefying plant is run by men of no special experience; but the great and continued success of the installation is undoubtedly due to the technical skill available.

It may be taken that results are very satisfactory in districts where cheap power is available, and where local duties, high transport charges, or other conditions raise the price of imported dynamite to a high figure. On the other hand, there are usually in "reef" mines a few holes inaccessible to the liquid oxygen containers, and for these gelignite is still used.

Figures.

The following figures, kindly furnished by Mr Kuryla, are of great interest. The lamp-black cartridge weighs 64 grm. 1 of lamp-black requires theoretically 2.67 of oxygen, and 64 × 2.67 = 171 grm. oxygen. The amount generated is 3 × 171, or 513 grm. per cartridge. A dynamite cartridge of equal strength is 8 in. × 1¼ in. = 255 grm. Thus 513 grm. liquid oxygen equals 255 grm. 40 per cent. dynamite, or 2: 1, including the excess generated.

Cost.

At Pabst's figures of liquid oxygen at 1½d. per lit. and cartridges at 1d. each, we obtain the following comparative prices: One cartridge costing 1d. involving 500 grm. oxygen, costing ¼d., equals 250 grm. of gelignite, costing at 40s. a case (50 lb., or 22,680 grm.), 5½d. With liquid oxygen one thus obtains the same result for 1¼d. as for 5¼d. with gelignite.

But dynamite usually costs more than 40s. a case,

Instead of Pabst's figures, let us take actual figures of present-day (1922) practice:—

Cost of liquid oxygen, 7c. per lit,
Cost of cartridges, 1⅜c. apiece,

Then 1 cartridge at 1⅜c. plus ½ lit. liquid oxygen at 7 ÷ 2c. 1 stick of dynamite weighing ½ lb. at 21c. per lb.

(43s. 6d. per case),

Thus, oxygen plus cartridge at 4⅞c. dynamite at 10½c., or a saving of more than 50 per cent. by oxygen over dynamite.

But it must not be forgotten that generators have been much improved since the war, and that it is now possible to generate liquid oxygen on the spot for less than two-thirds of the power employed in the older plants, and that in an intallation of, say, 50 lit., the cost may be taken in out-of-the-way places, with fairly cheap power available, at 6c. per lit. On the other hand, in such out-of-the-way places the cost of dynamite, including special freight, transport and import duty, may be, and in fact is, three times the above cost.

Thus, in Bolivia, with a modern plant and cheap power, one cartridge at 2d. plus ½ lit. oxygen costing 2½d., total 4½d., equals one stick or dynamite costing (at 120s. per 50 lb case) 15d; thus oxygen at 4½d. equals dynamite at 15d.

Even after allowances are made for training men to new methods—the men prefer liquid oxygen to gelignite—and of repairs in apparatus, due to lack of experience, once more than establishes the actual present saving of 25s. per cent. over dynamite at 12c. per lb. ($6, or 27s. a case).

(*To be continued.*)

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[*] From Paper read before the Institution of M. and Metallurgy.

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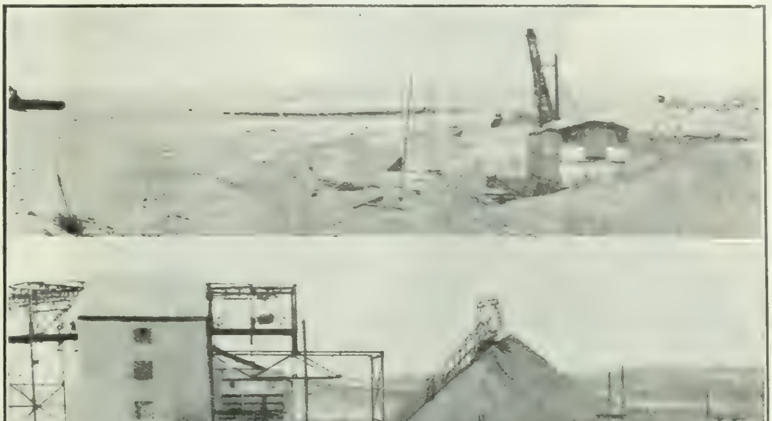

Scenes on the South-West African Diamond Fields (photos taken by our Special Commissioner for this supplement a few days ago): (1) Dredger at work near Kolmanskop; (2) Central Plant, Kolmanskop, Consolidated Diamond Mines of South-West Africa; (3) The Power Station at Luderitzbucht.

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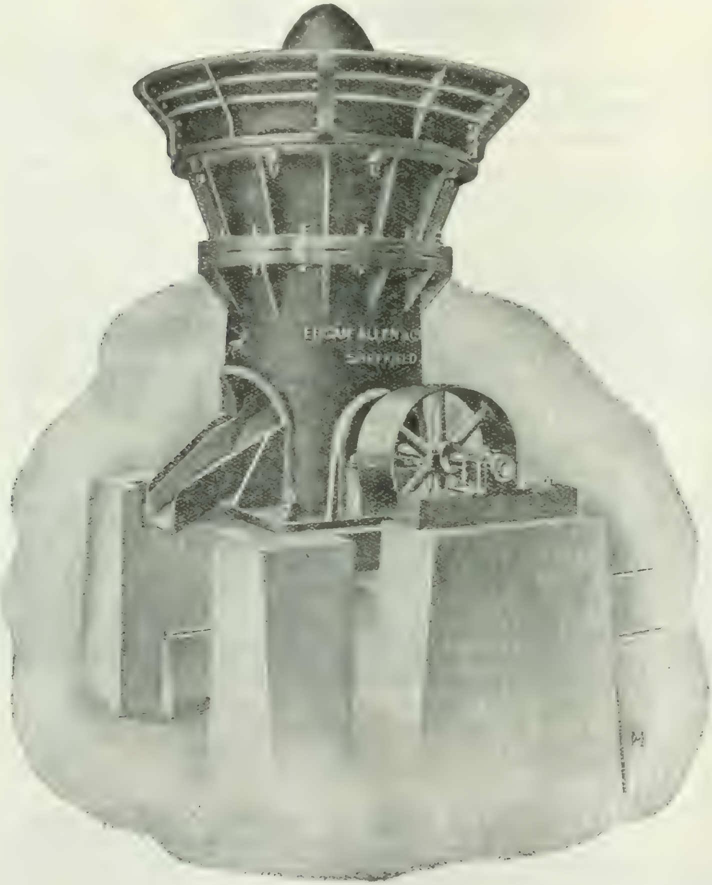

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Rand Mining Costs and Profits.

A COMPARISON OF PROFITS AND COSTS FOR FEBRUARY AND MARCH, 1923.

Company.	Profits.			Cost per Ton.			Remarks.
	March £	Increase £	Decrease £	March. s. d.	Decrease s. d.	Increase s. d.	
Aurora West	2,019	13	—	19 5	0 3		
Brakpan Mines	35,410		7,208	24 3		1 7	Decrease in Profit due to breakdown on March 26th of electric winding engine at No. 2 shaft which reduced tonnage by 10,000. Repairs completed and hoisting resumed April 2nd.
City Deep	52,241	5,907	—	24 6	0 9		
Cons. Langlaagte .. .	9,505	698	—	20 9	0 5		
Cons. Main Reef	11,564	463	—	27 6	—	1 3	
Crown Mines	73,968	12,271	—	20 2	1 2		
Durban Deep	4,628	1,123	—	26 1	—	0 1	
E.R.P.M .. .. (Loss)	9,128	—	3,845	21 4	0 4		
Ferreira Deep	5,813	80		20 1	0 10		
Geduld Prop.	29,930	3,661	—	20 8	—	—	
Geldenhuis Deep	814	225	—	21 0	—	0 2	
Govt. Areas	137,889	14,512	—	18 4	0 3		
Glynn's Lydenburg	420		252				Profit exclusive of shaft sinking, special development and capital expenditure amounting to £2,289.
Knight Central	4,455	—	1,222	15 3	0 5		
Langlaagte Estates	19,494	3,252		21 9	0 11	—	
Meyer & Charlton	20,577	505		20 6	1 0		
Modder B.	68,359	—	216	21 6	—	0 6	
Modder Deep	63,863	4,681	—	17 6	0 4	—	
Modder East	16,767	6,740		25 8	0 11	—	
New Kleinfontein .. (Loss)	1,232		1,332	22 1		1 0	Temporary breakdown of mill engine.
New Goch	879	774	—	19 7	0 1	—	
New Modder	132,693	10,191	—	16 1	0 5	—	
New Primrose	2,304	23		17 9		0 3	
New Unified	818	317		16 4	0 4	—	
Nourse Mines	6,810	663		23 3	—	—	
Randfontein Central	34,419	—	613	20 10	0 2	—	
Robinson Gold	5,955	1,483	—	16 9	5 6	—	
Robinson Deep	30,774	4,235		19 0	0 5		
Rose Deep	11,935	2,776		17 1	—	0 6	
Simmer & Jack .. (Loss)	1,362	—	1,837	19 7	—	0 6	Lower Grade.
Sub Nigel	5,424	413	—	43 2	3 7	—	
Springs Mines	46,797	6,483	—	22 9	0 4	—	
T.G.M. Estates .. (Loss)	2,514	2,098		-			Tonnage and working costs were again adversely affected by recent floods.
Van Ryn Deep	56,981	4,465	—	21 5	0 2	—	
Van Ryn Estate	6,467	445		19 4	0 10	—	
Village Deep	7,092		1,659	24 1	—	1 5	Renewal of shaft equipment occasioning delays in hoisting and additional expenditure.
West Rand Cons	2,051	19		22 6		0 5	
Wit. (Knights)	11,542	3,448		17 0	1 4	—	
Wolhuter	2,343	—	1,893	18 11	0 4	—	
Wit. Deep	11,753	3,388	—	19 3	0 8	—	

Zaaiplaats Tins: Improved Outlook.

The report of the Zaaiplaats Tin Mining Company, Ltd., for the month ended March 31, states: The mill ran 15 stamps, on 24-hours basis, three days 20 minutes, crushing 300 tons of ore. Concentrates recovered, 19.55 tons. 550 tons of tailings were treated by rotary pan, yielding 1.40 tons of concentrate. Total output for the month was 20.95 tons of concentrate, averaging approximately 73 per cent. metallic tin. In addition, 4.05 tons of concentrate were purchased from tributors. The month's shipment of 25 tons was sold at an average price of £227 15s. per ton metal. The estimated profit for the month was £2,407 exclusive of Government taxes and directors' fees. Capital expenditure nil. The manager reports as follows:—No. 6 Cross-cut Upper Section.—The upper section continued in high-grade ore for the month. The working face at one time during the latter half of the month measured roughly 65ft. by 6ft. The tin-bearing ore in the face averaged about 18in. Small sections of the face showed three veins, each 12in. On March 27, a 10ft. section of ore body was cut out by granite; this section of the stope has been left as a pillar, but further work will be done later on where a small eye of tin is exposed in the hanging. A drive of 22ft. by 5ft. by 5ft. has been pushed ahead of the stope in what is supposed to be the direction of the main pipe. The drive has exposed good ore for the 22ft. driven. The face of the drive at the end of the month shows two 6in. seams of high-grade ore. No. 6 Cross-cut Lower Section.—The small seam of tin ore in the foot wall widened out, and by the 25th of the month payable values extended over 18in. by 16ft. I am pleased to say that since March 10 the lower section has produced payable ore. General.—The outlook for the month of April is favourable, as both the upper and lower faces of No. 6 crosscut are in good ore.

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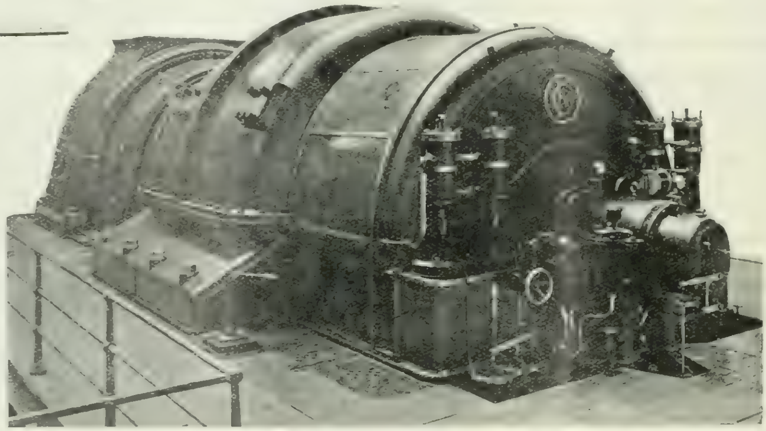

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The Gold Discovery on Batavia.

LATEST FROM THE WESTERN BUSHVELD GOLD FIELDS—IMPENDING PROCLAMATION—WILL THERE BE A RUSH ?—WORKING CONDITIONS AND VALUES.

(By a Correspondent.)

The following very interesting article on the "New Gold Fields," situated near the Bechuanaland-Transvaal Border, which engaged so much public attention towards the end of last year, deals with the latest position at Batavia and Kameelboom and other farms and discusses the outlook for this new and potential gold area. Our correspondent adopts a more optimistic tone in regard to these fields than the representative of this Journal did in the special article on the area, which appeared in the "S.A.M. & E.J." a few months ago.

The repeated postponements of the proclamation by the Government of the farm Batavia as a gold mining area have greatly stimulated public interest in this district. The first announcement of the actual date of proclamation in the *Government Gazette* has now been made, and on or about the 8th day of May the farm will be thrown open for pegging and a new centre of mining activity will result, with probably the effect of helping, in a small way, the unemployed to get work. Situated as it is, close to the border of the Bechuanaland Protectorate, about 36 miles by road from the nearest point on the railway, Gaberones, and some 74 miles north-east of the nearest railway station in the Transvaal, Zeerust, it is very inaccessible for both passengers and for the transport of material for mining purposes. The roads everywhere are bad, even for the Transvaal, and the cost of transport is bound to be very high. This is not an agricultural district, partly on account of its distance from the railway, but more especially on account of the very small annual rainfall. Consequently, the people of the district go in chiefly for ranching, and a few have milking cows for the production of butter fat for the Nel's Rust and other creameries. Another drawback is the presence of fever, chiefly in the summer months. Malaria is quite common amongst the Europeans who live here.

Water and Fuel Problems.

There is a great scarcity of water everywhere, and one has to go miles for a supply, except in some cases where wells have been put down by the farmers. There is no natural supply existing here. From Batavia the nearest point for water is the Marico River, about eight miles distant. There are two privately-owned wells at from three to four miles distance, but they are in request for supplying the herds of cattle belonging to the ranchers.

Wood, of course, is plentiful, and a fair quantity could be used for mining purposes, but there is not nearly enough for steam raising in boilers, and in this respect fuel will be a very expensive item in mining costs, no matter whether wood or coal is used. Water power is impossible, and oil is still more expensive than any of the above. Should the proclamation of the ground result in the opening up of the claims with a view to mining, the question of an effective water supply will demand instant attention. Whatever method is adopted, whether a pumping plant at the river or deep boring within the area itself, the cost will be quite beyond the reach of the ordinary small mine worker. Obviously the matter is one for concerted action on the part of the claimholders, or perhaps, if the value of the claims justifies the outlay, by the creation of a water company, who would throw a weir across the Marico River at some convenient point—and there are several suitable places between the hills—and pump the water to a central service reservoir for distribution to the mines. Probably a company with £20,000 capital would be able to do this. The water will not gravitate itself from the river, but would require to be pumped, as the ground rises all the way from the river to the claim area.

One cannot imagine at the outset a settled mining community on the place. Much labour and time will be necessary to bring the claims to the producing stage, and meanwhile there are always the drawbacks of distance from the railway, from water and, indeed, from civilisation, plus the unhealthiness of the district. At present there is the still greater drawback as to the payability of the reefs over a large area. This must be determined definitely before anything like a permanent mining camp can be established, and this will take some considerable time under the best conditions. The gratifying feature is that the nearness of the Protectorate ensures a large supply of native labour, not certainly of a high quality, but such as will enable mining to be carried on constantly and without much fear of a labour shortage. At present boys are willing to work at from 15s. to 30s. a month with food, and they are eager to get employment close to their kraals.

A Scene on the Western Bushveld Gold Fields.

Outstanding Features of the Fields.

The Batavia ore bodies are of the banket variety. Two gold carriers have been located up to the present, the so-called North and South Reefs. They are about 100 feet apart on Batavia, but vary somewhat in this respect on the farms Kameelboom and Portugal. Both reefs outcrop on the top of a short range of hills about 200 feet in height. They have each a sandstone hanging wall, turning into quartzite at depth, and a shale or slate footwall. The pebbles are of the vitreous quartz variety and range from an eighth of an inch to over six inches in diameter; there are also pebbles of felspar and some of quartzite in the banket. The matrix is quartzite, and the cementing material is iron. All the pebbles are water-worn, and there is this important difference between the Batavia banket and that of the Rand that the former contains small seams of quartz embedded in the banket, while the latter is practically all pebble quartz. In all probability the source of origin of each occurrence is the same, and they have the further similarity of having a quartzite hanging wall and a slate footwall. The dip from the surface averages 22° south, the mean of a number of angles taken by means of a clinometer. The direction is roughly east by south and west by north, but this is not universally so. Within a distance of a quarter of a mile from some cuttings the reef changes its direction, both as regards the strike and dip, in consonance with the curving line of the hills over a long distance, as, say, from Kameelboom to Bloemhof farms. The reefs gradually curve from an easterly direction at the former to a southerly direction at the latter, with a corresponding change in the dip. It is quite possible that there may be other gold carriers found quite apart from the two above mentioned. A cutting put down on the level ground between two hills, near the western boundary of Batavia, disclosed a wide ore body of over three feet of banket lying between layers of sandstone. Samples of this reef gave [illegible] 10 dwt. in the pan over three feet of reef. The North and South Reefs on Batavia consist of only an inch or so of banket at the surface, but thicken rapidly, and at about ten feet down on the dip they give from a foot to over three feet of thickness. On going west and crossing the boundary of Batavia to Kameelboom, the reefs are much better developed right from the surface, as in the cuttings so far made the reefs are over three feet all the way down.

Sampling a Trench on Kameelboom.

Analyses have been made of a number of samples taken from these cuttings, both on Batavia and Kameelboom, and have given from 340 dwt. free gold down to 8 dwt., silver from 60 dwt. down to a trace, and platinum nil in all cases. Similarly good results have been found on the farm Bloemhof, some miles away to the south-east, and on the farm Portugal, adjacent to Batavia on the south. It would appear from this that the ore bodies are consistently valuable over a long distance, and there is reason for believing that such is the case.

Value in Depth Problematical.

It must not be forgotten, however, that comparatively little work has been done on the area—not nearly sufficient to justify any definite expression of opinion as to values even on the outcrop, and certainly nothing at all to determine the value of the reefs at depth. Some attempts at drilling have been made with a hand drill, using Kimberley bits for cutting. The very hard nature of the quartzite, however, made it impossible to penetrate the formation, and after a two months' trial the work was abandoned. Consequently, the only available knowledge of the reef values is that disclosed in the cuttings, which in no case go more than a few feet below the surface. Without being too categorical, one may, however, fairly assume from the nature of the occurrence that the values will continue to some depth below the surface, and that the reef bodies are not simply of the nature of gash veins. Even now, allowing for differences of elevation between the extreme points, there is tangible evidence of values to, say, 200 feet in depth from the highest to the lowest points at present more or less proved.

Doubtless, once the proclamation of the area is made final, the claimholders will set to work vigorously and get well down on the dip of the reefs, and plenty of evidence of values will be quickly forthcoming. Perhaps some enterprising spirit will come along, build an assay furnace, and provide himself with occupation both lucrative to himself and of great advantage to the miners. There are at present four discovered claim areas pegged on the two farms Batavia and Kameelboom. Owing to their relative positions, only a comparatively small area of the gold bearing banket formation lies within the Batavia boundaries, while a considerably larger area lies within the beacons of Kameelboom.

Big Interests said to be Watching Developments.

It is an open secret that a deal, very advantageous to the owners of the discoverer's claims, has been or is about to be made with a certain Knight, representing considerable financial interests in Johannesburg, and that, not content with having secured options over nearly all the surrounding farms, this same gentleman is busily organising a band of helpers, who will be in readiness when the great day comes off to peg off for him all the still open ground on Batavia and, if possible, on Kameelboom also. Of course, there is nothing immoral in this; it is a perfectly legitimate endeavour to secure a large mining area. It is mentioned here chiefly to show that the discovery is viewed seriously by people who are in a position to spend much capital in opening up a new and promising mineral district. Whatever may tend to relieve the present deadweight of unemployment in South Africa must be heartily welcomed by all who desire the progress of the country. A number of gold areas have been mentioned during the last year as being possible wealth-producers. Most of them have gone under, a few are struggling along under a cloud, and none of them has done much to relieve the incubus of a workless people. The new area is promising; the gold contents of the reefs have been proved on the surface for many miles. It only remains, then, to put capital into the work and develop on a large scale, and there is the strong probability of a "new Rand" emerging from the effort. Not of such largeness, doubtless, nor of anything like the same extent in any way, but still a new field of employment for many of our citizens and an addition of wealth to South Africa.

The Daggafontein Mine.

The Minister for Mines informed Mr. Van Aardt on Tuesday that he understood there was some prospect of the re-opening of the Daggafontein Mine, and that negotiations to this end were proceeding. There did not seem to be, he said, any practicable method of compelling the working of mines, except by confiscation, and even this had objectionable features, and did not solve the problem as to who was to put up the money to work the mine, which was presumably closed for some very cogent reason connected with finance or with the problems of development and payability. The Minister pointed out that Section 127 of the Gold Law already provided certain machinery for dealing with this question.

The Mining Position at Barberton.

A LITTLE HISTORY—PAST FAILURES AND SUCCESSES—MINES THAT HAVE MADE GOOD—NEW VENTURES.

From a Specia' Correspondent.

It may be of interest to readers of the *Journal* to learn something of the mining position at Barberton. It is as astonishing as it is true that the public—and especially that portion of it known as the small capitalists—know so little of Barberton's mining history. Nearly 40 years ago Barberton was a hive of industry. Admittedly there were a number of companies formed, and money invested in them, without any regard to the values of the properties acquired, and with the inevitable result that the disappointed investors left Barberton and their money with many regrets, and have not ceased to give the district a shockingly bad character.

The principal reason for the desertion of Barberton was the great counter-attraction afforded by the discovery of the conglomerate beds of the Witwatersrand. This was quite natural, seeing that development of the "banket" beds of the Central Rand were not only disclosing very rich values of gold, with more than one payable reef; but the continuity of the beds over so large an area offered still further inducement to syndicates and private enterprise to invest their money, until the day came when the smaller capitalist either sold out to the financial groups or hung on, unable to develop his ground for want of the necessary capital, until he was "starved out" by the larger financial potentates, who acquired not only the "outcrop" claims, but who eventually became the possessors of the "deep levels," which without very big capitai it was impossible to open up and develop.

Road Making in the Barberton District.

Smaller capitalists from time to time have returned to Barberton and acquired ground, but, on finding the ore refractory, again gave the place a bad name and left it because they had no means of treating ore which was not amenable to the ordinary methods of "catching" free gold.

Some Successful Mines.

The few who did recognise the great potentialities of the Barberton district held on in the first instance to the smaller properties containing free-milling ore, and in the meantime studied the best means of treating the refractory product. Most of these owners have worked and are still working at considerable profit. These mines are notably the New Sheba Gold Mining Company, Ltd., who have recently replaced their old plant and have installed an up-to-date "minerals separation" plant for treating the refractory ore. This company has scarcely recovered its normal stride. The Consort Mine is successfully treating its refractory ore, consisting of arsenical pyrites, which it is converting into a most useful disinfectant and selling very readily to the farmers of the district. The Consort Mine is owned by Mr. E. C. Dicey, who has worked it for a number of years, and in its early history had a tough uphill fight, owing to lack of the necessary capital. He is to be congratulated on the success he has attained. The ore at the Consort contains both arsenic and antimony, but is also rich in gold.

The "Maid of De Kaap" is another mine adjoining the Consort, carrying a good percentage of arsenical pyrites and also containing exceptional gold values. Mr. Andrews and his sons control this mine, and have brought it to a very profitable producing stage. Mr. Andrews is an early Barbertonian, has stuck to the district very pluckily, and deserves all the handsome profits he is credited with making in his latest venture, the "Maid of De Kaap."

The New Fortuna.

Messrs. Chew and Carlin are also to be congratulated on the profits they have made at the "New Fortuna" mine, now shut down, but by no means finished. This mine made its profits not from high-grade ore, but from free-milling ore of under 5 dwts. By careful and economical working, and by increasing the capacity of their reduction works from 10 to 30 heavy stamps, with corresponding cyanide treatment, the owners were able to retire from active work, and the property and plant are at present for sale.

Road Making in an Outlying District, Another View.

There is also Moodie's Gold Mining and Estate Company, Ltd., which is the oldest company probably in the Barberton district. It has not of late years worked any mines on its own account, but amongst those companies who have done well are the "Fortuna," on Brommer's farm, the "Ivy," "Pioneer," "Alpine," and others which are to-day stopped, but by no means worked out. The "Agnes" is still being worked by Messrs. Rowe and Gibson, and it is understood that they are satisfied with the profits they are making.

New Ventures.

Having glanced at the mines which have done well in the past and are still making profits, I am none the less pleased to mention those recently started, the owners of which have not lost faith in Barberton, nor are they too concerned about the gold being associated with refractory contents.

The "[illegible]" Syndicate, working on a tribute basis, [illegible] of the [illegible] ("The "[illegible]") [illegible], have [illegible] on previously developed [illegible] and have erected a small mill and cyanide plant. This [illegible] has so recently started milling that it is too early to [illegible] what the regular profits will be, but it is reported that the [illegible] are quite satisfied.

The "[illegible]" claims have also quite recently been acquired by a [illegible] Company. The claims have been held by Mr. F. C. [illegible], and are said to have produced payable gold long before the cyanide treatment for [illegible] [illegible]. The company is at present developing the reef, and is also busy with the erection of a small mill.

Main Adit, Cleopatra Mine.

The "[illegible]" Company has also been at work at [illegible] Creek, but the writer not having visited this mine, and not having any authentic information in regard to it cannot do more than mention it in passing.

A Recent Flotation.

The latest venture is the newly-floated company "Cleopatra Gold Estates, Limited," with head office in Johannesburg. The claims are on Moodie's farm, "Oorschot" No. 20, on Concession Creek, and have been purchased from Mr. B. Chew, of the New Fortuna Company. These claims contain two reefs, one a free-milling quartz body worked in 1889 by a company and managed by the late Mr. [illegible], who, when engaged by Messrs. Lewis and Marks, lost his life at the Vereeniging Coal Mine in attempting to recover the bodies of coal miners who had been fatally gassed. The reef now being developed is an ore body 12 feet thick (vertical), containing about 45 per cent. of sulphur, the gold being enveloped in the iron pyrites. So far the values and widths of this reef continue of a very payable nature and both mining and reduction costs will be exceptionally low. The mine manager at the "Cleopatra" is Mr. H. S. Martin, and the resident managing director Mr. W. F. Hallimond.

Cutting a Path through the Eastern Transvaal Bush.

Options on several other propositions have recently been acquired by syndicates and private individuals, some of which will be turned to good account, provided the necessary capital is forthcoming.

Letters to the Editor.

DRILL STEEL.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—It is said in agricultural circles that the individual who makes two blades of grass grow where formerly one grew is a nation's benefactor. Similarly, I take it the inventor who brings into profitable exploitation 100 per cent. increase of the Rand's known resources of gold ore is a nation's benefactor. This credit belongs to Mr. O'Donovan, E.R.P.M., for his new process of steel sharpening. His process makes use of the fact that iron and steel are magnetic up to a certain temperature of heat. This degree of heat is that at which the steel is in the best condition for hardening, and at this degree of heat the steel also becomes non-magnetic, and after being bitted, graded and sharpened, is ejected by means of springs from the bath-furnace, and is then ready for the face of rock. This should save the low-grade mines position—i.e., that portion of the industry that is producing gold at 2s. per ton or less—as the economic and right percentage of nitro-glycerine content of the explosive has in some instances been the determining factor between a profitable and unprofitable mine.

One point we take Mr. O'Donovan to presume is that he will give us a better drill or jumper through its length, as breakages occur more frequently in the body of the drill than at the bit. This is especially so of hollow steel, where crystallization sets up, or, perhaps, from corrosion set up in the sand pits of the water bore in the older process steel.

The Water Leyner, being the hammer type, can sometimes drill round corners. In the old reciprocating type of machine, the jumper being attached to the piston, the alignment had to be correct, otherwise it jammed; but the Leyner hammer is often hitting a jumper "out of truth."

The writer fully appreciates the important discovery, when as a contractor having to pay 3d. for carrying a drill to the working place, then the company's 3d. for attention, and four jumpers to the hole means 2s. for steel alone.

It would appear that in addition to alignment of the hole, some process of renaturing or annealing the steel would be of avail.

Perchance the competitive struggle between the Sheffield and Swedish steel kings for the Rand's market will automatically solve this latter point.—I am, etc.,

L. P. SHERIDAN.

The monthly meeting of the S.A. Chemical Institute was held on Tuesday, April 21, at 8 p.m., at the Scientific and Technical Club, Johannesburg, when the following contributions were presented: "The Sleeping Sickness Remedy—Bayer 205," by Dr. J. Moir; "The Estimation of Potash in Mixed Fertilisers," by Mr. E. C. Rees and Mr. G. Ingham; "Some Analytical Methods," by Dr. Marchand and Mr. Bischoff.

The Year with Rand Mines, Limited.

INCREASED PROFITS DUE TO INVESTMENTS SOLD—CHANGES IN LIST OF SHAREHOLDINGS.

The annual report of Rand Mines, Ltd., for 1922, possesses several interesting features. The profit for the year, £800,620 5s. 4d., shows an increase of £281,948 16s. 10d. as compared with the previous year. This is accounted for as follows:—Increase in amount of profits received on realisation of investments, £349,935; increase in amount of sundry revenue and interest and exchange, £13,929; decrease in administration expenses and expenditure on prospecting ventures, etc., £34,787. Less decrease in amount received on dividends on shareholdings, £110,913; decrease in reservoirs revenue, £5,790.

The profit of £800,620 5s. 4d. has been carried to the credit of Appropriation Account, which, with £579 3s. 5d. in respect of forfeited dividends, an amount of £507,978 16s. 10d. representing the book value of investments sold, and £499,424 7s. 4d. being the amount unappropriated at the commencement of the year, makes a total of £1,808,602 12s. 11d. From this sum Dividends Nos. 38 and 39 were paid, absorbing £512,537 15s. 0d.; Government taxes absorbed £12,149 7s. 0d.; whilst the sum of £441,779 19s. 1d. was appropriated for new investments and for the purchase of 75,844 Rand Mines, Limited, ex-enemy shares. This leaves a balance of £842,135 11s. 10d., which is represented in the balance sheet by cash and cash assets, less liabilities. The policy of writing down the value of the company's shareholdings to the market value in the cases where the book value exceeds the market price has been continued; the sum thus written off amounts to £25,780 0s. 4d. In addition to this sum £41,388 4s. 11d. has been written off claims, water rights and participations in unfloated ventures. These amounts have been deducted from Reserve Account and are reflected in the Balance Sheet submitted. The amount of the Reserve Fund now stands at £2,128,542 11s. 4d. The book value of the various shares and debentures held by the company is £2,364,695 4s. 9d., which is considerably below their market value.

The list of investments as at December 31, 1922, is as follows. For the purpose of comparison we append the list as at December 31, 1921:—

Shares and Debentures, etc., at or below Market Value, December, 1922.

49,520	Anglo-American Corporation, Ltd.	Shares of	£1
63,944	Bantjes Consolidated Mines, Ltd. (in Liq.)	do.	£1
7,750	Brakpan Mines, Ltd.	do.	£1
5,350	Cape Portland Cement Co., Ltd.	do.	£1
145,613	City Deep, Ltd.	do.	£1
4,323	Consolidated M.R. Mines and Est. Ltd.	do.	£1
687,555	Crown Mines, Ltd.	do.	10s.
1,534	Daggafontein Mines, Ltd.	do.	£1
68,217	Durban Roodepoort Deep, Ltd.	do.	£1
14,447	East Rand Proprietary Mines, Ltd.	do.	£1
269,968	Ferreira Deep, Ltd.	do.	£1
642	Geduld Proprietary Mines, Ltd.	do.	£1
264,893	Geldenhuis Deep, Ltd.	do.	£1
114,300	General Estates, Ltd.	do.	£1
2,548	Jupiter Gold Mining Co., Ltd. (in Liq.)	do.	£1
215,260	Modderfontein B. Gold Mines, Ltd.	do.	5s.
27,211	Modderfontein Deep Levels, Ltd.	do.	5s.
92,512	Modderfontein East, Ltd.	do.	£1
246,315	New Modderfontein G.M. Co., Ltd.	do.	10s.
175,027	Nourse Mines, Ltd.	do.	£1
21,000	Pretoria Portland Cement Co., Ltd.	do.	£1
13,072	Robinson Deep, Ltd., " B " Shares	do.	£1
1,400	Robinson Gold Mining Co., Ltd.	do.	£5
234,224	Rose Deep, Ltd.	do.	£1
27,730	South African Iron and Steel Corp., Ltd.	do.	£1
44,356	The Hume Pipe Co. (S.A.), Ltd.	do.	£1
45,347	The Village Main Reef G.M. Co., Ltd. (in Liq.)	do.	£1
19,520	Turffontein Estate, Ltd. (in Liq.)	do.	£1
50,276	Village Deep, Ltd.	do.	£1
4,644	West Springs, Ltd. (fully paid)	do.	£1
87,600	West Springs, Ltd. (18s. per share paid)	do.	£1
20,017	Witbank Colliery, Ltd.	do.	£1
14,120	Wolhuter Gold Mines, Ltd.	do.	£1
	Sundry Shares and Debentures		£109,283
	Total		£2,214,665

Debentures.

£26,160 East Rand Proprietary Mines, Ltd., 5 per cent. Debentures	£14,715
£150,350 Modderfontein East, Ltd., 8 per cent Debentures	£135,315
Total	£2,364,695

Rand Mines, Limited, Shares.

75,844 ex enemy shares at cost	£155,622
Total	£2,660,041

Shares and Debentures at or below Market Value at December 31, 1921.

50,820	Anglo-American Corp., Ltd.	Shares of	£1
70,244	Bantjes Con. Mines, Ltd.	do.	£1
12,500	Brakpan Mines, Ltd.	do.	£1
5,350	Cape Portland Cement Co., Ltd. (15s. per share paid)	do.	£1
175,913	City Deep, Limited	do.	£1
4,780	Con. M.R. Mines and Est., Ltd.	do.	£1
780,405	Crown Mines, Limited	do.	10s.
1,534	Daggafontein Mines, Ltd.	do.	£1
123,517	Durban Roodepoort Deep, Ltd.	do.	£1
18,847	E.R. Proprietary Mines, Ltd.	do.	£1
342,768	Ferreira Deep, Ltd.	do.	£1
1,898	Geduld Proprietary Mines, Ltd.	do.	£1
282,493	Geldenhuis Deep, Ltd.	do.	£1
114,300	General Estates, Ltd.	do.	£1
2,548	Jupiter G.M. Co., Ltd. (in Liq.)	do.	£1
211,592	Modderfontein B. Gold Mines, Ltd.	do.	5s.
16,304	Modderfontein Deep Levels, Ltd.	do.	5s.
122,498	Modderfontein East, Ltd.	do.	£1
201,368	New Modderfontein G.M. Co., Ltd.	do.	10s.
313,427	Nourse Mines, Limited	do.	£1
19,300	Pretoria Portland Cement Co., Ltd.	do.	£1
126,222	Robinson Deep, Ltd., " B " Shares	do.	£1
29,275	Robinson G.M. Co., Ltd.	do.	£5
266,724	Rose Deep, Limited	do.	£1
27,730	S.A. Iron and Steel Corp., Ltd.	do.	£1
43,356	The Hume Pipe Co. (S.A.), Ltd.	do.	£1
45,347	The Village Main Reef G.M. Co., Ltd. (in Liq.)	do.	£1
19,520	Turffontein Estate, Ltd. (in Liq.)	do.	£1
100,026	Village Deep, Limited	do.	£1
581	West Springs, Ltd. (fully paid)	do.	£1
112,500	West Springs, Ltd. (16s. per share paid)	do.	£1
21,017	Witbank Colliery, Limited	do.	£1
14,120	Wolhuter Gold Mines, Limited	do.	£1

	£	s.	d.
Shares and Debentures	£2,251,669	0	7
Sundry Shares and Debentures	139,995	10	2
Debentures and Union of South Africa Stock: £26,160 East Rand Prop. Mines, Ltd., 5 per cent. Debentures, £14,715; £150,350 Modderfontein East, Ltd., 8 per cent. Debentures, £135,315; £100,000 Union of South Africa 4 per cent. Stock, 1943-1963, £68,416 13s. 4d.	218,446	13	4
	£2,610,111	4	1

The most important changes in the list, it will be noted, are in Robinson Deep "A" shareholdings and Village Deeps, both of which were substantially reduced during the year. Small increases are shown in the holdings of New Modders, Modder B's, and Modder Deeps. Reduced holdings are also shown of City Deeps, Crown Mines, Durban Roodepoort Deeps and Nourse Mines.

DESIGNS —— DRAWINGS —— TRACINGS

Working Drawings made from clients' sketches and instructions; mechanical and structural work handled for inspection or supervision; drawings prepared for patent specification.

J. E. PARKER, M.I.Mech.E., M.A.I.M.E.,
'Phone 1760. Box 559, Pretoria.

The Sterkfontein Diamond Diggings.

From a Special Correspondent.

This farm is situated about 22 miles [illegible] of Lichtenburg, in the Transvaal Province.

It has an area of over 3,000 morgen, divided into five portions, and it belongs to a family named Prinsloo. It is amusing to note that a family of this name owns the farm on which the Premier Mine exists. Only a portion of the whole farm has, however, been proclaimed by the Government as a public digging; this portion amounts to about two-fifths of the total area of the farm, and lies altogether on the south-west side of the property. Up to the present over 2,000 claim licences have been issued to diggers. Each licence costs [illegible], and entitles the holder thereof to peg one claim of 15 yards square. Although only six weeks have elapsed since the date of the throwing open of the ground, a new town has sprung up on the field, a town of tin, wood, canvas, old sacking-covered-in tent wagons, tarpaulin-covered motor cars, etc., etc., sheltering more or less badly over 6,000 people, there being men, women and children in residence. A number of very primitive shops are open to buyers of groceries, meat and clothing. A few huts shelter the diamond buyers, and one the Government official, who represents the authorities. A Diggers' Committee exists, nominally for the due ordering of the community, but apparently it does not function, since no provision has yet been made for the sanitation of the camp, nor for the provision of pure water, or, in fact, anything to promote health and public decency. It will be indeed fortunate if an epidemic of some kind does not break out soon. Should this occur the mortality bill will not be a small one, and, in any event, the drinking of contaminated water must be fraught with grave disadvantages from the point of view of health. The nearest town and the nearest medical assistance is 21 miles away, *i.e.*, Lichtenburg, and when one remembers that no postal or telegraphic, much less telephonic, arrangements have been made, it does not tend to improve the the outlook of the people in case of need. The Education Department is equally remiss. Although there are scores of children of school age no steps have been taken by the Department to promote the well-being of the children educationally. A small farm school exists six miles away, but at present the school is closed owing to the teacher's illness. The vast majority of the diggers are Dutch, and belong to the bywoner class. A number of families have drifted here from the Haartebeestpoort Dam, a few phthisis men are among the number, and the rest are chiefly farmers of the "get rich quickly" class, who are not content to farm their lands, but must needs add their quota to the shiftless class of people who chiefly live on the diggings. The present area is only a very small portion of the known diamond-bearing ground in this locality. The adjacent farm, [illegible], one half native, one half held by a missionary, is also known to contain alluvial diamonds, and this additional area will be proclaimed at an early date. Even now prospectors are hard at work on the areas proving the ground and making sure of securing claims for themselves as "discoverers." There is one pleasing feature to be noted on the diggings: nearly all the claims are payable, and very few of the holders go absolutely unrewarded for their labours. At least 90 per cent. of the stones found are small, 1½ carats and under. A few stones have been found up to 15 carats in weight, and one stone is reported as having weighed 50 odd carats, and as having been sold for £1,250, but this latter is only hearsay. The stones, however, are remarkably good, and are among the best of their kind. This will be seen when the prices of the stones per carat given here are compared with those obtaining at Bynesspoort. The average price of the Sterkfontein stones is £4 10s. per carat, and that of the Bynesspoort product is [illegible] 10s. per cart. These are actual buyer's prices on the fields.

A remarkable fact has been further elicited concerning the Sterkfontein diamonds, and that is the sharpness of the stones; the ordinary river diamond is well rounded on the edges, due doubtless to attrition by water over long distances. Here the diamonds are not usually water-worn, but have more often distinctly sharp edges, and in the words of a well-known buyer are really nice stones. Another important factor must be noted also, in that the area of the deposit seems to be very circumscribed, and does not extend to a great length in any direction, but on the contrary seems to radiate from a central point. It does not appear impossible to imagine the existence of a true pipe, or at least of a fissure, as being responsible for the dispersion of the diamonds in these diggings. It is certain that the evidence so far gatherel does not point to the existence of an ordinary alluvial deposit.

The depth of the alluvial varies considerably, even as between two adjacent claims, and is anything from a few inches up to over 18 feet in thickness. One cannot point to any particular area of ground as containing a thicker deposit than another area, but the thickness of the deposit seems to bear little relation to the direction; it seems rather to be the result of depressions existing in the ground itself at the time of the placing of the deposit in situ. The writer has seen a claim with a ten-foot depth of alluvial next to one containing barely as many inches of deposit, and this is a common feature of the fields. Although the fields have been proclaimed since the beginning of February, not nearly the whole of the ground has yet been taken up. There are still many openings for adventurous spirits in which to try their luck; and—a word to the wise—a number of the claims are of the dummy order, *i.e.*, they are pegged but not registered, possibly held over by the pegger in the hope of a sale to a prospective buyer (claims have fetched as high as £50), or as a reserve for himself when his own claim is exhausted. A pleasing feature of the diggings is the evidence of the ability of the white man to do his own work. Quite a number of the diggers handle the pick and shovel, or push the grizzly themselves; it may be due to poverty, but then, on the other hand, it may be due to the white man having a true pride in his work. Whatever the motive, the fact remains that the number of boys at work to-day is not a large one in proportion to the whites. The lessons learned at Haartebeestpoort and elsewhere by the white man are bearing fruit in due season. One most reprehensible feature in connection with these diggings must be noted.

There is abundance of water on the farm—more than sufficient for all purposes; this being provided by a flowing stream of water. But access to this source of supply is actually denied to the diggers by the farm owners. They have made a close preserve of it, and will only allow the water to be drawn from the stream on payment of a levy of 3d. per barrel. This sum is collected from each wagon passing a point on the road, where sits the collector at the side of his hut, levying tribute from sunrise to sunset. The water carrier is an institution in himself. About 50 wagons engage in the water-carrying business, provided with all sorts of ancient contrivances for fetching the supplies for the diggers. They pay their levy of threepence to the "keeper of the gate" on stream water, and in turn charge another fourpence per barrel to the digger, making the latter's charge 7d. in all.

It is a nice question as to whether the farmer can legally levy this money for the water from a running stream. The diggers should take a leaf out of the book of the Kameelpoort diggers' methods of tackling this problem. They simply ignored the farmer, refused to pay any levy, helped themselves to the water freely, and dared him to restrain them, and in this they proved to be right. The farmer took no action and the diggers took the water.

As to the probable life of these fields. A year's work will doubtless exhaust all the known alluvial area, and unless other areas are discovered—and this is somewhat doubtful, for reasons given above—the life of the Sterkfontein field will be very short; at any rate on its present basis. However, it meanwhile provides a fair prospect of a living for a time to a very large number of people, and that is all to the good. Few of the diggers are hoping for valuable finds, but all of them are satisfied that they will be able to live on the profits of their labour. One hears rumours of a great extension of the field towards Wolmaransstad—the usual tittle-tattle of the diggers—but it is to be hoped that new areas will be discovered and developed.

The urgent matters at the moment are, however, the provision of proper sanitary arrangements and the removal of the iniquitous water embargo, and, further, the education of the numbers of children who are now being uncared for and neglected by the Education Department.

J.C.I. Mines in the March Quarter.

AN ALL-ROUND DECLINE IN PROFITS.

The quarterly reports of the Johannesburg Consolidated Investment Company's group of mines have now been published, and the following information is abstracted from them:—

Consolidated Langlaagte mines crushed 138,500 tons and show a total profit for the quarter of £28,731. There was a decrease of 3,200 tons in the ore crushed as compared with the previous quarter. The revenue was 6d. per ton lower and there was an increase of 8d. per ton in the working costs, with the result that the working profit was £3,678 less than for the preceding three months.

Langlaagte Estate crushed 148,400 tons and the total profit was £55,791. Compared with the previous quarter there was a decrease of 4,200 tons in the quantity of ore crushed, an increase of 1s. 2d. per ton in the working costs, and a decrease of 6d. per ton in the revenue, which resulted in a decrease of £14,366 in the working profit for the quarter.

New Primrose crushed 63,300 tons and show a total profit of £7,289. The quantity of ore crushed was 300 tons less than during the previous three months. There was a decrease of 4d. per ton in the revenue, and an increase of 7d. per ton in the working costs, with the result that the working profit at £6,832 was £2,871 less than for the preceding quarter.

Van Ryn Deep crushed 173,100 tons and show a total profit of £169,505. There was an increase of 1,700 tons in the quantity of ore crushed as compared with the previous quarter, but, owing to a decrease of 3s. 2d. per ton in the revenue and an increase of 6d. per ton in the working costs, the working profit for the quarter shows a decrease of £29,678 as compared with the preceding quarter.

Government Areas crushed 429,000 tons and the total profit was £407,369. Compared with the previous quarter, there was a decrease of 1d. per ton in the working costs, and an increase of 7,500 tons in the quantity of ore crushed, but there was a decrease of 3s. per ton in the revenue, with the result that the working profit for the quarter shows a decrease of £53,104.

Witwatersrand crushed 142,350 tons, and the total profit was £29,657. The quantity of ore crushed during the quarter shows an increase of 5,750 tons, and the working costs show a decrease of 1d. per ton as compared with the preceding three months. Owing to the reduced price obtained for the gold produced, the revenue was 1s. 8d. per ton lower, with the result that the working profit at £25,088 was £9,809 less than for the previous quarter.

Randfontein Central crushed 526,000 tons and show a total profit of £111,900. The tonnage crushed was increased by 16,000 tons, the working costs show an increase of 1d. per ton, and the revenue a decrease of 1s. 2d. per ton as compared with the previous quarter. In consequence of the increase in the working costs and the lower price obtained for the gold produced, the working profit was £31,128 lower than for the preceding three months.

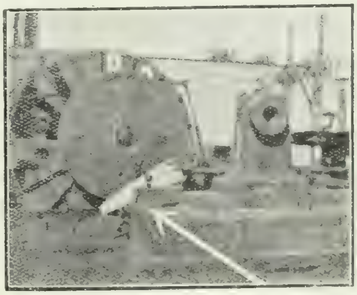
New Unified crushed 36,600 tons and show a total profit of £2,396. During the quarter the quantity of ore crushed was increased by 2,500 tons and there was a decrease in working costs of 6d. per ton as compared with the previous quarter. There was a decrease of 1s. 10d. per ton in the revenue, with the result that the profit for the quarter was £2,131 lower than for the preceding three months. Notice of intention to close the mine expired on the 31st March, but the mine will be kept running so long as it is possible to continue to do so without loss.

New State Areas expenditure on capital account for the quarter amounted to £218,168, of which £103,768 was spent on development, and the balance on surface equipment and work in connection with the reduction plant. The reduction plant as a whole is nearing completion, and it is anticipated that crushing will commence early in May.

The declared profits in the Johnnies group have been arrived at by adding together the published monthly figures, the value of the gold produced having been calculated at the following prices: January, £4 9s.; February, £4 7s. 6d.; and March, £4 7s. 6d. per fine ounce.

A "Wonder" Saw.

A hand-saw that will cut through an engine bed must be a saw that is more than equal to any ordinary and everyday tasks to which it may be put. The illustration on this page shows the new Sanderson Roofing Saw making a clean cut through an engine bed on one of the big mines. The bed was cut through cleanly and completely, in quick time and without fuss or bother. And, after this unusually severe and convincing test, the saw showed no noticeable signs of damage, and was, therefore, ready and fit for further work of any kind. The engine bed which was cut through was 17½in. deep, and 15in wide, with 1in. metal. The saw showed not the slightest sign of wear or tear of any description. This severe and convincing test shows that super qualities are built into this new hand saw. The teeth will not break or blunt, and they make light and quick work of sawing through nails, screws and corrugated iron, etc. This new Sanderson saw is, also, an exceptionally good hand tool for the many daily wood-working requirements to which a saw is put. Several sizes are carried in stock, and prices are very reasonable. Messrs. Bartle and Co., Ltd., are the sole South African Agents.



The Wonder Saw at Work.

Mining Questions in the Union Parliament.

QUERIES REGARDING SUNDAY WORK, DAGGAFONTEIN, TRAMMERS' EARNINGS AND ROBINSON DEEP.

Several questions emanating from Labour Members were answered by the Minister of Mines in the Assembly this week. We quote some of the more interesting:—

Mining Work on Sundays.

Mr. Sampson asked the Minister of Mines and Industries: (1) Whether he is aware of the growing practice of mining companies of causing work to be performed on Sundays at ordinary rates of pay which could conveniently be performed on week days, and is not of the character contemplated by paragraphs (a), (b) and (c) of Section 6 of Act No. 12 of 1911, and, if so, (2), whether he will cause an inquiry to be made with a view to preventing unnecessary Sunday work?

The Minister replied as follows: With reference to the question asked by the hon. member for Jeppe on April 10 in regard to Sunday working on the mines, I have made inquiries into this mater, and it appears that inspectors of mines have, under instructions, given special attention to this matter, and the practice of Sunday work in connection with certain services has decreased materially. The class of work referred to is in the main shaft examinations and repairs by shaft timbermen, permission for which work have been given by the Government Mining Engineer under the last paragraph of Section 6 of the Act, being obviously work which cannot conveniently be done during the week. It is understood that the shaft timbermen do not exceed the allotted hours of six shifts or 48 hours per week, except, of course, in emergencies. In the latter case they receive time and a half, but otherwise they receive ordinary pay for their six shifts.

Position of Reduction Workers.

Colonel Creswell asked the Minister of Mines and Industries whether he had received from the South African Reduction and Surface Workers' Association copies of correspondence which had passed between it and the Chamber of Mines relative to the position of shift leaders and as to whether or not a person occupying that position had the status of an official in the recognition of arrangements of the Chamber relative to trade unions; whether he has inquired into the matter with a view to representing to the parties concerned a settlement of the question, and what recommendations he has made?

In reply, the Minister said: Copies of the correspondence referred to were received by the Inspector of White Labour, Johannesburg. In the conciliation machinery agreement signed by all parties concerned, shift leaders are included in the list of reduction workers' officials. The reply was in the affirmative. A conference was arranged between the parties. No recommendation has been made. The policy of bringing the parties together and leaving them to settle their differences with as little interference as possible was followed in this instance as in other cases.

Trammers on Village Deep.

Mr. Sampson asked the Minister of Mines and Industries whether he is aware that trammers working underground on the Village Deep are required to work for periods longer than those laid down in the Mines and Works Act, 1911, and, if not, whether he will cause inquiries to be made into this alleged breach of the Act?

The Minister replied as follows: I have made inquiries into this matter. Trammers working underground on the Village Deep are not required by the management to work for periods longer than those laid down in the Mines and Works Act, 1911, but it appears that in certain cases they have done so owing to the bonus on tonnage without the knowledge of the management.

Daggafontein Mine.

The Minister of Mines, in reply to Mr. Van Aardt, stated that he understood there were prospects of the Daggafontein Mine being re-opened and that measures to that effect were in hand.

Robinson Deep Fence.

Mr. Sampson asked the Minister of Mines and Industries (1) Whether the Robinson Deep Gold Mining Company obtained permission of the Mining Commissioner, in terms of Section 70 of Act 35 of 1908 of the Transvaal, prior to erecting the fence round their property recently; (2) if so, on what grounds such permission was granted, and (3) if such permission was not obtained first, whether he will take steps to cause the company to remove the fence?

Mr. Malan replied as follows: (1) Certain fencing has been erected by the Robinson Deep Gold Mining Company around the Chris shaft. The fence in question was completed prior to the necessary permission of the Mining Commissioner being obtained, but this has now been given. (2) The permission was granted in terms of Section 70 (1) (a) of the Gold Law. The shaft is in an isolated position, and as the company has suffered from theft the fencing is strictly in accordance with the terms of the law. (3) The answer is in the negative.

Mining Men and Matters.

Mr. C. W. Francis Harrison passed through Johannesburg this week on his return to England.

* * *

Mr. J. H. Crosby, manager of the Johannesburg Consolidated Investment Company, Ltd., has left on a brief business visit to London.

* * *

Mr. J. V. Blinkhorn, after many years' service as secretary of the companies of the Albu Group, is retiring at an early date, and Mr. A. Geiger, formerly of Messrs. Neumann & Co. and the Rand Mines, Ltd., has been appointed to the position vacated by Mr. Blinkhorn.

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Robinson Deep: A Year's Progress.

THE SUPERINTENDING ENGINEER AND THE MANAGER ANALYSE AND REVIEW OPERATIONS IN 1922—WORKING COSTS AND EFFICIENCY.

Unusual interest attaches to the annual report of the Robinson Deep for 1922. In the course of his annual report, Mr. G. A. Chalkley, the superintending engineer, writes:—A comparison of the results obtained during the last seven and a half years is as follows:—

Year	Tons Milled	Yield per ton Dwts.	Yield per ton Value.	Costs per ton	Profit per ton	Total Profit on Working
18 months to 31/12/16 ...	965,400	6·879	28 7·957	19 7·392	9 0·565	£436,705
1917 ..	561,400	6·588	27 6·296	22 5·295	5 1·001	142,691
1918	529,300	6·462	26 11·764	25 8·245	1 3·519	34,225
1919	580,500	6·608	31 1·996	25 10·920	5 3·076	152,567
1920	624,600	6·291	35 2·937	29 2·448	6 0·489	188,652*
1921 ..	695,200	6·033	31 8·128	26 6·058	5 2·070	179,800*
1922 ..	635,200	6·334	29 1·692	21 3·988	7 9·704	248,003*

* Includes premium on gold

The average price of gold during the year 1922 was approximately 93s. 3d. per fine ounce, and the extra amount realised by the premium on gold was £72,080. The development footage accomplished during the year amounted to 11,830 feet, as compared with 18,035 feet during the previous year. This decrease is due to the small amount of development work done during the strike period, or the first three months of the year. The footage sampled during the year was 5,100 feet, of which 4,345 feet, or 85·2 per cent., was in payable reef indicating an average value of 15·9 dwts. with an average reef width of 35·7 inches, equal to 568 inch-dwts. The ore reserve fully developed at 31st December, 1922, is estimated at 1,846,000 tons of an average value of 6·7 dwts. per ton over a stoping width of 70 inches, equal to 469 inch-dwts., as compared with 442 inch-dwts at 31st December, 1921, an increase of 27 inch-dwts. In the above calculation the pay limit has been taken at 5·0 dwts., which was the pay limit taken at the end of the previous year. The average number of natives at work during the year was 4,291. The labour position from July to December has been satisfactory, the average number of natives at work during the month of December being 5,068. The strike of white workers in the early part of 1922 was referred to in my report for the year 1921, and is further dealt with by the manager in the accompanying report, wherein he calls attention to the great increase in efficiency both of whites and natives since that period. The greater discipline and control of workmen with the resulting efficiency and economies in working, accompanied by a slight decrease in the cost of stores, have resulted in an appreciable decrease in working costs which from 26s. 6d. per ton milled in 1921 were reduced to 21s. 4d. per ton in 1922. In May the sand-filling borehole holed at a depth of 1,960 feet in the workings of the Crown Mines, having undergone a deflection of about 300 feet in a north-westerly direction to the course of boring, arrangements have been made with the Crown Mines to enable us to lower the sand into our workings. In July the winze from the reduction works connected with the borehole and preparations are now proceeding to put them into commission for taking sand.

Points from Manager's Report.

Mr. W. E. Turvey writes: Native employees left in large numbers for their kraals during the strike, and recruiting operations were suspended while it lasted. Upon the return of the strikers to work the natives rapidly flocked back to the mines, and the average underground complement for the mine was 81·88 per cent. for the period April to December, and 86·5 per cent., a remarkably high figure, for the latter half of the year. The average complement for the preceding year was 79·75 per cent. The average pay per shift was 2s. 1·8d. for the last six months of the year, as compared with 2s. 2·5d for 1921.

Development.—The development for the year amounted to 11,830 feet. The drop in footage as compared with the previous year, a matter of 6,205 feet, was due to the strike and the shortage of native labour immediately after. From January to March only 587 feet were developed, and it was not till August that the normal rate was re-established, when from then to the end of the year an average monthly rate of 1,527 was accomplished, as compared with 1,503 feet for the preceding year.

Shaft Sinking.—The headgear and tip of the Sub Vertical Shaft and the shaft section between 3,600 and 3,800 levels were excavated during the year, as well as the 3,700 Level Station, which constitutes the "bank" for this shaft. The ore and waste chutes to deliver from this shaft to the "Chris" shaft loading bins were completed, and the work of enlarging the former for ore storage capacity was well advanced. The erection of two winders was completed and a third nearly so. The sheave supports were installed and tipping arrangements all but completed. The ventilating plant for the shaft is now being installed, and it is expected that sinking from below the 3,800 Level will be in full swing early in the present year.

Tonnage and Grade.—The tonnage milled for the year was 635,200, a decrease of 40,000 tons upon the preceding year. From January to March there were milled only 52,300 tons. The average monthly output for the last six months of the year was 71,800 tons, as compared with 57,900 tons per month for the previous calendar year. This large increase in the rate of production was due to the improved post-strike conditions and the large native labour force available. Underground work was reorganised; a no-cost contract system was introduced which offered a more effective inducement to the rock-breaker to increase his efficiency, and with the more effective control of labour and better discipline the productivity of both the white and native miner was substantially increased. The one man one job principle which had gained so strong a position among the white underground employees during the war is undoubtedly unsuitable to the conditions under which the mines of the Rand are worked, and, instead of conducing to intensive production, it leads to overlapping of responsibility and is a clog upon efficiency. With its abolition after the strike it was found possible to organise the [illegible] worker, the essential producer on these fields, to far greater effective purpose, and not only this but by affording him greater scope and freedom he worked with a better will under the new conditions. The following figures illustrate various important improvements in efficiency and cost of production.

Stoping Efficiency and Costs.

	Fathoms Stoped	[illegible] per Stoper	Fathoms per Machine Shift	Cost per Fathom
Average per month, 1921	3,398	69	682	57 1
Average per month, July to December, 1922	4,013	[illegible]	780	[illegible]7 8

[illegible]

	[illegible]	[illegible]	[illegible]
Average per month, 1921	1,200	60	[illegible]
Average per month, July to December, 1922	[illegible]	[illegible]	[illegible]

[illegible]

	[illegible]	[illegible]	[illegible]	[illegible]
Average per month, 1921	[illegible]	[illegible]	[illegible]	[illegible]
Average per month, July to December, 1922	[illegible]	[illegible]	[illegible]	19.42

The average yield for the year was [illegible] dwt., the recovery value 6.410 dwt., and the average value of the residues [illegible] dwt. During the latter half of the year, when larger tonnages were being treated, the residue value rose to .377 dwt., notwithstanding the advantage of the [illegible] for [illegible]. There was a deficit of actual recovery compared with theoretical extraction, which amounted to [illegible] fine ounces.

Working Expenditure.—The average monthly costs for the latter half of the year were £67,844, or 18s. 10.724d. per ton milled, as compared with £76,095, or 26s. 3.241d. per ton milled, for the previous year. Reference to the summary of costs below shows that the chief factor in the lowering of costs was the reduction in the white wages bill, due to there being fewer men employed at an average lower wage. The lower rate of pay was due to the disappearance of the cost of living allowance and the smaller earnings of contractors.

SUMMARY OF COSTS.

	1921		July to December, 1922	
	Average Monthly Expenditure. £	Cost per ton Milled.	Average Monthly Expenditure. £	Cost per ton Milled. s. d.
Native Wages	£11,616	4 0.120	£13,142	3 7.948
Stores	£33,290	11 5.912	£33,238	9 3.051
Sundries	£4,877	1 9.590	£6,521	1 9.785

Costs were adversely affected by the large influx of native labourers after the strike, a large proportion being new and their number at times being in excess of requirements. Maintenance of plant was unduly heavy on account of the severe demands made upon it by the large tonnages handled. The price of stores generally continued to show a gratifying decline throughout the period, tending to harden a little towards the end of the year. The following figures are of interest in this connection:—

	1921		July to December, 1922	
	Average Monthly Quantity Issued.	Cost per unit.	Average Monthly Quantity Issued.	Cost per unit. s. d.
Cyanide (lbs.)	18,091	1 4.80	19,553	1 2.75
Explosives (cases)	1,184	64 2	1,178	55 9
Zinc (lbs.)	16,004	7.01	14,866	4.90
Steel, Shoes	53,965	2.36	39,081	2.04
Timber (poles)	2,265	7 4.7	1,870	5 3.6
Mill Balls, etc. (lbs.)	89,441	.3563	92,055	.1882

"Glen" Shaft Pumping Plant.—The new pumping plant was at last completed during the year, and upon arrival of the new motors will be put into commission.

Oil Shale Experiment Abandoned.

The attempt to extract oil from shale in New South Wales by means of firing it in the ground and collecting the oil thus distilled, has been abandoned, according to an announcement by Mr John Bell, who was conducting the enterprise. The high cost of Australian labour and the low price of imported oil are given by Mr Bell as the principal reasons why these remarkable oil shales cannot be worked at a profit.

New State Areas Plant.

STARTING UP ON MAY 1st.

THE SPRINGS MINES EXPERIMENTS.

In our last issue, under the heading of "Extended Crushing Operations on the East Rand," we dealt with the completion of the new plants at Geduld and New State Areas. We then stated that "the New State Areas is the first gold mining proposition on the Witwatersrand to discard a method of ore reduction which has been in vogue for more than a third of a century." We regret that we did not make this statement a little more clear. What we intended to convey was that the New State Areas will be the first mine to commence crushing operations without stamps. We pointed out that the New State equipment has been designed largely in accordance with experiments in tube crushing at Springs Mines, which really gave the practical lead to the New State Areas Company in designing its new plant. Credit for the translation of these new metallurgical ideas into actual practice belongs primarily to Mr Carl Davis and his technical lieutenants of the Anglo-American Corporation, and whilst the New State Areas will be the first Witwatersrand mine to begin crushing without the aid of gravity stamps, due credit for this departure should be given to the Springs Mines Company and its technical heads. Whilst on this subject attention may be directed to the excellent photo of a portion of the New State plant which was taken specially for this Journal a day or two ago.

The New State Areas Plant which will come into commission on Tuesday.

To Safeguard Miners.

A warning device which should do much to safeguard the lives of miners is a bell which automatically sounds an alarm if there is a dangerous amount of gas or firedamp in the mine. The invention is that of an English electric engineer and his son, a chemical engineer. One of its most important features is that it continues to sound as long as the air in the mine is impure. It can be set so that it goes off as soon as a certain percentage of gas or firedamp is in the atmosphere, and it gives ample time for the miners to escape before the air becomes really dangerous. At one end of the bell is a sensitive plate in contact with the atmosphere, and how effective it is may be judged by the results of stringent tests. The vapour from three drops of whisky shaken from a tumbler held over the plate was sufficient to set the alarm ringing.

The Durban Roodepoort Debenture Issue.

SUMMARY OF SALIENT FEATURES OF CONDITIONS GOVERNING THE ISSUE.

Details are now available of the Durban Roodepoort Deep issue of 6 per cent. debentures. A special meeting has been called for June 29 to consider the scheme. The salient features of the conditions are summarised as follows:—Debentures to the amount of £100,000 will be issued at par and will be registered in the names of the holders and will be transferable by means of ordinary transfer deeds. Interest at the rate of 6 per cent. per annum will accrue from the 1st July, 1923, and will become due for payment half yearly on the 31st of December and 30th of June in each year. The debentures will be offered for subscription to shareholders. No limit will be placed on the amount of debentures for which any shareholder may apply, but each shareholder will, on application, be entitled to an allotment of at least £1 value of debentures for every five shares held subject to the terms of Clause 4. Any allotment in excess of this pro rata will be made at the absolute discretion of the Board of Directors. The Central Mining and Investment Corporation, Limited, and the Rand Mines, Limited, have undertaken to take up such of the debentures as may not be applied for by shareholders for a commission on the whole issue of 3 per cent. Debentures will be issued in denominations of £5, £10, £25, and £100 each. No application for a less amount than £5 will be entertained, and the total amount of debentures applied for on each application form must be for an amount which can be made up of the aforementioned denominations. There will be no redemption of debentures for the first three years, reckoned from the 1st day of July, 1923. During that period the debenture holders will have the right to convert their debentures into shares of the company of the nominal value of £1 each, on the due date for the payment of interest, provided that the debentures are lodged for surrender at the office of the company fourteen full days prior to such date. Such conversion will be at the rate of one share of the company for each £1 nominal value of debentures, and the shares in exchange will only be issued for a number equivalent to the total amount of the debentures surrendered. Interest in respect of debentures so converted will cease on conversion, and the shares issued shall be ex dividends declared before the date of such issue. After 30th of June, 1926, the right of conversion shall cease, and the debentures which remain unconverted will be redeemed at par by five equal annual drawings, and will be repaid together with any interest which may have accrued thereon. The company will have the right at any time to purchase in the open market or otherwise all or any of the debentures at or below par, plus accrued interest. All debentures so purchased will be cancelled, and may, at the option of the company, be set off against its obligations to redeem by annual drawings.

There is no official explanation of the object for which the issue is being made, but it may be surmised that the the proceeds will be applied to the liquidation of debt, enabling the company to consider the payment of a dividend at an early date.

The Mozambique Portland Cement Co., Ltd.

PRODUCTION STAGE NEARLY REACHED—ANNUAL GENERAL MEETING.

The annual general meeting of the shareholders of the Mozambique Portland Cement Company, Limited, was held on Saturday, April 21, in the Board Room, Exploration Buildings, Johannesburg.

Mr. A. O. Kutal presided. Amongst those present were: Sir Duncan McKenzie, Messrs. B. d'Alpoim (Portuguese Consul), J. F. Ferreira (Portuguese Vice-Consul), D. A. Thompson, S. Heydenreich, W. G. Adamson, J. J. de Moraes, H. Struckel, F. Schellnbacher, S. W. Snyman, A. Ettlinger, L. S. Patterson, A. Christodoulou, C. E. Kearns, J. Lonie and F. Davis. 86,56 shares were represented personally and by proxy.

The Secretary having read the notice convening the meeting, the Directors' report having been taken as read, and the Auditors' report read, the Chairman said: "In moving the adoption of the Balance Sheet and the Report of the Directors, I have but few remarks to make in regard thereto. The debenture issue, I regret to say, did not meet with the success your Board anticipated, its anticipation being mainly founded on the hope that shareholders would materially come to the Company's assistance by subscribing thereto. The Board's hopes having been frustrated, your Directors were not in a position to expedite the erection of your factory as expeditiously as they wished. I am glad, however, to be able to inform you that owing to the assistance of our Portuguese friends who appreciated the progress of the works and the potentialities of the industry in their midst, that the factory will be completed for the manufacture of cement at a very early date.

Nearing Producing Stage.

"The major portion of the Cement Plant has been erected, including the Kiln and Heavy Tube Mills. The balance of this portion of the work will not take long to complete. The Power Plant is being installed with the utmost despatch, and the representative of the Brush Electrical Engineering Company assures us that this will be completed in a very short time. The Laboratories and other essential structures are also in course of construction, and provided nothing unforeseen happens your Directors feel that in the very near future they will be able to circularise shareholders advising them that the Company has reached the producing stage.

"Mr. Andersen, the Works Manager, who has been on the property since the middle of March last, is confident of being able to turn out a high grade Portland Cement, and that at a price to meet competition from all quarters. Upon this point your Directors hope to convey more detailed information at an early date.

"In regard to the Balance Sheet there is one point to which I would like to draw your attention that appears to be a point which is somewhat confusing, namely the Bank overdraft on the debit side amounting to £1,081 12s. 4d., and cash on hand and at the Bank amounting to £2,059 6s. 3d. on the credit side. The one represents an overdraft at one Bank, and the other a credit at another Bank.

Works Construction Economy.

"In conclusion, I would like to give shareholders my personal assurance that every possible economy has been exercised in the construction of your works, and my thanks are due to the Managing Director who has worked untiringly on behalf of the Company. I would also like to convey my thanks to the Engineering and other staffs, who, I am satisfied, after personal inspection, have done good work.

"With these few words, I move the adoption of the Report and Balance Sheet."

This was seconded by Mr. D. A. Thompson and carried unanimously.

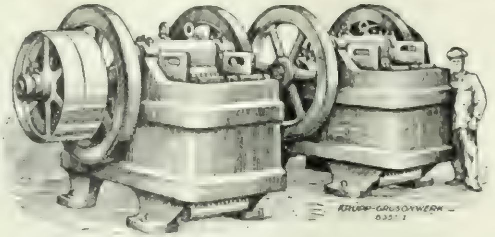
Messrs. D. A. Thompson and J. J. de Moraes were re-elected Directors of the Company.

The appointment of Mr. J. [illegible] Gomes da Silva as a Director of the Company was confirmed.

The retiring Auditors, Messrs. Deloitte, Plender, Griffiths, Annan and Co., were re-appointed Auditors for the ensuing year and their remuneration fixed for the past audit.

No further business being transacted, the meeting terminated with a vote of thanks to the Chairman.

F. KRUPP A. G. GRUSONWORKS



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TOPICS OF THE WEEK.

The W.N.L.A. Meeting.

Mr. H. O. Buckle's speech at the annual meeting of the Native Recruiting Corporation this week dealt in detail with the native labour recruiting position. The report for last year showed that during the year the Association's recruiting activities were confined to the Province of Mozambique, South of Latitude 22° South. Recruiting operations were disorganised throughout practically the whole year, and only 35,958 natives were recruited, being the lowest annual output of East Coast natives since the year 1913. The industrial disturbances on the Rand necessitated the suspension of recruiting operations from January to March, while during the last six months of the year operations within Portuguese territory were much curtailed to enable the trading industry to provide employment for the abnormal number of B.S.A. natives, who, on account of failure of crops and the restricted sphere of employment elsewhere, offered themselves for employment on the gold mines. Of the 35,958 natives recruited no less than 88 per cent. were old mine boys.

The most important portion of Mr. Buckle's speech was that dealing with the labour prospects for the coming months. It would seem that the bumper mealie crop expected and the demand for labour from other quarters is likely to cause a shortage in the not too far distant future. With the restriction of recruiting from the East Coast the outlook is none too bright, and Mr. Buckle put the matter in a nutshell by saying: "The industry was confronted with the unenviable position of having the major portion of its native labour free to leave for their homes at very short notice. If, as indicated by reports, the mealie crops were large, Union natives might avail themselves of this opportunity. A sudden shrinkage from this cause would bring the industry to a parlous state, and the present state of affairs was the cause of some uneasiness. A large and unstable native labour force created an economically unsound position, and continuance of the existing restriction on the supply of Portuguese natives might easily endanger the prosperity in some cases the very existence of the mines.

The Budget Debate.

Mr. Burton very effectively demolished his critics in his reply to the Budget debate. Mr. Fichardt, General Hertzog and the Labour leaders in turn came in for pretty severe handling, and the Minister's speech may certainly be regarded as a real triumph for the Government. From our point of view the chief feature in the speech was Mr. Burton's tribute to the part played by the mining industry in the economic life of the country.

"Somebody said that the discovery of gold and diamonds in this country had been a curse," declared Mr. Burton. "I do not take that view for a moment, but I say that whatever you may think of it there can be no doubt that that discovery has been the foundation of our development as a modern State. The development of agricultural and other industries in this country, make no mistake about it, have been built up on this mining industry. Much of our current expenditure can be classed as expenditure on development. Take what you are providing for the expenditure on the Agricultural Department, the Irrigation Department, public works and things of that sort; it is all expenditure on your current account, but it is truly on loan account on account of the development of this country. If you had to do without the discovery of gold and diamonds in the country, I fear to think what the position of South Africa would be. To-day you see what our position is even with that, and without it we should have remained a small agricultural and pastoral community, and if you remember what the position was it is idle to tell me that the gold and diamond mines have been a curse to South Africa."

On the subject of coal, the Minister said:—"A very interesting book had been published by Mr. Wybergh, and of the coal mines of the country Mr. Wybergh said that in the Witbank area there are 6,500,000 tons of coal, and how much more is there in this country! It will go on for hundreds of years, and the Government Mining Engineer authorises me to say thousands of years instead of hundreds. Now, however, we must sit still and hear from the hon. gentlemen that we must not export it. Well, if we do not take it out, here is a case of your wealth being conserved and the country will grow richer. This is the sort of stuff which the unfortunate poor man throughout the country is expected to swallow."

Mr. Burton went on to point out that "in the five years from 1918 to 1922 the gold mines of the Witwatersrand paid out in white wages £15,000,000, in native wages

£[illegible] for South African mines [illegible], and the imported mining [illegible], or altogether £[illegible], of which no less than £[illegible] was spent in this country. That amount," Mr. [illegible] remarked, "nearly £[illegible] per annum, and if you [illegible] was a [illegible] £[illegible] spent on the Union. Let me [illegible] for a single moment to the vital importance of this industry to the country from another point of view. Take the case of one mine. We have heard so much of the East Rand Proprietary Mine. The mine is on the verge of closing down; it may have to close down any day. I do not want to make too much of this, but we know perfectly well that there are other mines which may be in the same position. Now take this mine, the E.R.P.M., which produced in the last five years £[illegible] of gold. The [illegible] on that has been about [illegible] of a million, and the profit has been absorbed in repayment of debentures. The mine [illegible] £[illegible] per year in wages and stores, and the stores are mainly of South African manufacture. You have only to consider the case for a single moment to see what value these mines are to us for the welfare of the people of this country. If you compare this with the production of any big manufacturing industries you will see the difference. [illegible] will see that I am [illegible] to these South African industries. I want them to develop and prosper, but I only call attention to the exceedingly great advantage of the mining industry to the people of this country. I will not trouble you with the figures."

By such indisputable facts and figures did Mr. [illegible] refute the critics, and his speech should be studied by all who have the future of the country at heart.

Sir David Harris on "Saint Mining."

The debate on the Budget afforded Sir David Harris an opportunity also to preach a useful little homily on the value of mining to the country, in the course of which he [illegible]. Sir David, like Sir Alfred Mond, in his now famous reply to the Socialists in the House of Commons, was [illegible] to his own career as a [illegible] example of the result of economic freedom. He recalled that when he landed in South Africa in 1871, Durban was a village. There were no railways, and very few public buildings. He walked to Kimberley, and on the way could see no decent farmhouses. There were a few small shanties and the children were clad in skins. The country was poverty-stricken when he arrived in the Free State, and the Treasury was in such a parlous financial state that there were no [illegible] bluebacks, supposed to be of a sovereign value, but for which the storekeepers would hardly give 1s. 6d. Even in those days they apparently had some idea of the currency question. Shortly after the diamond fields were discovered the Free State was able to redeem those bluebacks at par, so that the first effect of the discovery of diamonds was to rescue the Free State from bankruptcy.

Proceeding, Sir David submitted figures concerning the position of the country before and after the discovery of diamonds and gold, and went on to say that there had been an improvement in everything and everybody and in the wealth of the country. In 1859 the total revenue of the Cape Colony was £[illegible]; in 1869 the revenue was £[illegible]. For the ten years after the discovery of diamonds the increase in revenue for the Cape was £1,942,000. In the first ten years after gold had been discovered in the Transvaal the revenue had increased from £2,[illegible] to £[illegible]. That was a big jump. In 1867, before mining was discovered, the total revenue of the Capetown municipality was £21,819. In 1919 the rates alone amounted to £412,314. In 1919 the total value of Capetown immovable property was £30,[illegible]. That was only one example. There were far greater examples in Durban, Pretoria, and other parts of South Africa. This, said Sir David, is how mining has impoverished South Africa and taken the wealth out of the country. Mining development has been a godsend to South Africa. "Hon. members opposite, and especially the old farmers of this country, should offer up prayers nightly for the old prospectors, including myself. South Africa," he continued, "has no patron saint. Scotland, England, and Ireland have them, and even Wales, I understand, has a St. David (not after me). But, sir, if South Africa adopts a patron saint an appropriate name would be 'Saint Mining.'"

Sir David ended on a note of hope and confidence. He declared: "The possibilities of South Africa are enormous. The surface has only been scratched. Gold mining, like all mining, has its [illegible]. Diamonds, I know of my own knowledge, will be produced beyond the end of the century. Yes, I feel certain," emphasised Sir David, "we shall be producing gold and diamonds for considerably over a hundred years. Exports and agricultural produce will go on increasing, and although the cost of irrigation is rather expensive in consequence of the desire to prevent unemployment, I am sure the irrigation schemes now in progress will be great factors in the progress of South Africa. Every sane unprejudiced man must look forward with confidence to the future of South Africa. I have studied our finances, and I make bold to say that within 50 years this will be a creditor country. Already one-third of our public debt is held by people living in this country. According to the Public Debt Commissioners' report in 1910, at the time of Union the total debt was £116,[illegible]. The people of this country had subscribed £[illegible] of that total. There had been a gradual increase since, and in 1922 out of a total debt of £191,718,000, £[illegible] was owned by people who live in this country, equal to [illegible] per cent. of the total. That shows a steady increase, and if it goes on in the next 25 or 30 years the total debt of the Union will be owned by the people living in South Africa."

Sir Abe Bailey Hits Out.

One of the most notable contributions to the debate on the Budget was that of Sir Abe Bailey, who had much sound constructive criticism to offer in his speech last Monday. Sir Abe is not afraid to criticise the Minister of Finance when he thinks it necessary, but he reserved his really straight hitting for the Nationalists, who had nothing but bad things to say of the Budget without taking the trouble to understand it. Mr. Fichardt, whose figures now turn out to be all wrong, came in for severe and thoroughly well-deserved chastisement at the hands of the member for Krugersdorp. Transvaal Provincial Council finance shared the equally well-deserved condemnation. "As members know," said Sir Abe, "we have freak legislation in the Transvaal and freak taxation. You have a poll tax there and an employers' tax. Imagine, Mr. Speaker, just at the moment when people are requiring employment, they put an employers' tax on the very people who cannot stand it. It will tell on the small contractors and on the low-grade mines, the mines with the large number of boys like those on the East Rand, and they cannot stand it. I say that, judging by the taxation there and judging by the Nationalist-Labour combination's achievements, you are going to have self-interest and intrigue as a standard of Nationalist legislation in this country as it is in the Transvaal to-day. That is why I am not surprised that this petition is being signed against the Provincial Council." On the vexed question of the measures of protection for young industries Sir Abe was quite sound and reasonable. "Last year," he said, "the Prime Minister in his speech told us that this year we could expect before Parliament a comprehensive reform of tariffs, and that a Commission was going into the whole question and that we were going to have a scientific tariff for the purpose of encouraging and protecting the industries of this country. It is no use going in for any haphazard policy. You have in this country the two great industries, the agricultural and the mining industries, and they are primary industries. They are carrying the country on their backs, and the future of the white races depends on the success of these industries and the attraction of capital to these industries, because with capital immigrants will come to this country, but we must see that we get immigrants of good character. This country requires white immigrants, but not unemployed or riffraff from any part of the world. There is no country where there are greater opportunities for people coming in, but it is in the one direction of industries that their future lies. It is to the land that the people must go, where they must settle in this country, and there is no other permanent industry for them. It is no use putting them into industries at present. The basis of everything in South Africa is the agricultural industry, and the agricultural industry of this country is permanent, and the mining industry, from the very nature of its short life, must be subservient." As a mining man and farmer and a politician Sir Abe, of course, is entitled to be listened to with respect, and it may be hoped that his sound and commonsense views will be circulated in extenso among the people of the country.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

ELECTRICAL SUPPLEMENT.

A special supplement dealing with electrical enterprises in the sub-continent will appear in the near future. This will embody many new features and will contain much valuable data of special interest to engineers and industrialists.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal will be leaving shortly for Rhodesia and Natal with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

Geduld Proprietary.

We are officially informed that the following cable was despatched to the London Office on April 25:

"Extension of reduction plant was put in commission yesterday and is running satisfactorily."

* * *

No Offers for Geduld East.

It is noteworthy that in the course of his speech in reply to the Budget debate on Wednesday the Minister for Finance announced that no tenders had been received for the Geduld East area. There is a whole world of meaning in this brief statement. It reflects only too clearly the reluctance of capitalists to compete for the privilege of running the gauntlet of Nationalist and Labour hostility, Provincial Council predatory taxation, and the numerous other vexatious restrictions on new mining enterprise in this country.

* * *

A New Cement Venture.

The Cradock Portland Cement Company, Ltd., is the name of a new venture that has been floated with a capital of £100,000, under the directorate of Messrs. Charles Edward Lawford, A.M.I.C.E., Chairman of the Great Fish River Irrigation Board (Farmer, Oerley, P.O. Mortimer); Herbert Joseph Collett, J.P., Member Great Fish River Irrigation Board (Farmer, Saltpansdrift, P.O. Fish River); Grey Atherstone Barber, Member Great Fish River Irrigation Board (Farmer, Halesowen); Harold Budler, M.B., F.R.C.S.(Edin.), (Cradock); Edward Carl Becker, Member Great Fish River Irrigation Board (Farmer, Hursley, P.O. Cradock). The success of this company is assured by the fact that it has obtained contracts from the Great Fish River Irrigation Board which controls the expenditure of over £500,000. Sixty-three thousand £1 shares are being offered to the public.

Mozambique Cement.

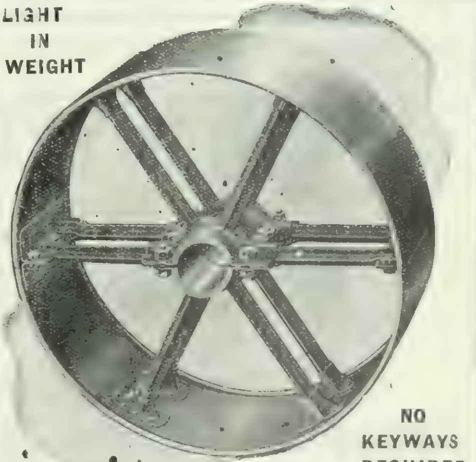
In another part of this journal will be found a full report of the proceedings at the annual meeting of the Mozambique Portland Cement Co., Ltd. From the chairman's speech it will be seen that with the aid of Portuguese capital the factory will be completed for the manufacture of cement at a very early date. The works will be completed in a very short time. The new works [illegible] [illegible] confident of being able to turn out a high-grade Portland cement and at a price to meet competition from all quarters.

* * *

South African Industries at Wembley.

A demonstration of the process of diamond mining will be among South African features at the British Empire Exhibition at Wembley. The diamond industry, having decided to spend £10,000, has undertaken to supply a working plant capable of demonstrating the whole working process. For this purpose a large quantity of blue ground will be sent, and this will be treated each day at specified advertised times. The gold mining exhibit is being arranged by the Chamber of Mines, which has voted £1,000 for the purpose. A typical Rand mine will be shown at work.

The rapidly growing fruit industry of the Union will be represented officially by the South African Fruit Exchange, which will probably give public demonstration of grading and packing fruit for export. Another interesting item mentioned by Mr Arthur Canham, the Trade Commissioner, is the possibility of a section where the various cereals of the country and their products will be exhibited, and where public demonstrations of cooking, preferably by a South African expert, will be given. There will also be a special manufacturing section, organised by the South African Chamber of Industries, and the scenery, social life and industries of South Africa will be shown on films in a special cinema.



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South-West Africa.

A LAND OF VAST MINERAL RESOURCES—THE ROMANCE OF PROSPECTING—MINING HISTORY OF THE PROTECTORATE IN BRIEF.

The Protectorate of South-West Africa is still pretty much of a terra incognita in respect of the greater portion of its vast area of close on 400,000 square miles. Much of the country, as, for instance, Amboland, is to all intents and purposes "Verboten" to Europeans. The dreary wind-swept littoral known as the Namib, which extends inwards from the coast for from 60 to 100 miles, is one of the most desolate and forbidding regions on earth, and except for those areas in which diamonds have been discovered, it is practically untraversed by road or pathway. The aridity of the country generally and the difficulties necessarily attendant upon transport in such a large area traversed by a very slender railway system, wherein water, and to a lesser degree, food, is always a problem, and a big problem, have not tended towards any rapid development of the country's resources. Moreover, under the German regime little encouragement was offered to foreigners to open up the country.

A Romantic History.

Since, however, the earliest days of European occupation the country lying between the Orange and the Cunene has appealed in a romantic sort of way to seekers after mineral wealth. Reports of the presence of gold in the country led Willem van Reenen in 1791 to seek his fortune in Great Namaqualand, and ever since then there have been periodical bursts of prospecting activity. It was not, however, until many years after the Van Reenen expedition that the possibilities of the metalliferous occurrences in the Otavi dolomites were first appreciated. In 1901, an exepdition sent out by the South-West Africa Company of London, undertook developments which led to the formation of the Otavi Mine and Railway Company. Seven years later a great stimulus was imparted t omining enterprise in South-West Africa by the discovery of diamonds near Luderitzbucht. Shortly afterwards tin discoveries of importance were made, and in 1913 the value of the mineral output of South-West Africa amounted to over 3½ millions sterling. In the following year the outbreak of war brought mineral activities to a close for some months, but shortly after the conclusion of General Botha's victorious campaign work was resumed.

Union Capital in South-West Africa.

Since the war, a considerable amount of capital from the Union has found its way into the territory for the purpose of mineral exploitation, and were it not that in some quarters there is some anxiety as to the country's future political status and its constitution under the mandate in the years to come, it is probable that much more money would be forthcoming from the older States for its youthful annexe.

Of the big Witwatersrand Mining Houses, the Anglo American Corporation of South Africa has, of course, the leading stake in the Protectorate by reason of its close association with the Consolidated Diamond Mines of South West Africa.

It may be recalled that the Central Mining and Investment Corporation some time ago sought to gain a pied-a-terre into the country, and with this object in view bought the Kohero Tin Mine, a transaction, which, by the way, has not proved strikingly successful to the purchasers. As to other groups, the firm of A. Goerz and Co., now known as the Union Corporation, had a large interest in the South-West African Co. in the pre-war days. Over and above these there were such powerful concerns as the Otavi Mines and Railway Co. operating before the war, and this Company is working with conspicuous success at the present time.

It may be noted, too, that during the past year or two a considerable amount of money has been invested in the varied mineral resources of Souh-West Africa by the Cape Coastal towns, and generally speaking the position in the Protectorate to-day is that plenty of prospects—several of them of an attractive nature—are in the course of exploitation.

The Lure of Prospecting.

In 1920 the country was thrown open to prospectors and although no finds of startling value or arresting importance have been announced up to date, it is certain that several mineral discoveries of interest and of potential value have been made during the past couple of years. In many instances recent discoveries have in reality been the resuscitations of the rewards of prospectors in the days of the German regime. But there have also been numerous new discoveries of mineralised areas, the existence of which were unknown in the pre-war days, except, perhaps, to natives, who, generally speaking, kept what they knew to themselves.

The mineral possibilities of the country are undoubtedly great. The outstanding geological features of the Protectorate are intensely interesting, and in respect of certain types of formation and particularly so in regard to the great mineral complexes and undeveloped regions of the [illegible] South-West Africa may rightly be regarded as a [illegible] field for study and investigation.

At the present time South-West Africa may, in fact, be described as a country of prospectors, promoters and concession-snatchers. Here one meets grizzled prospectors who have completed a trek through the Kaoko Veld with donkeys, [illegible] up to the Angola border in search of [illegible]. He will tell you much concerning the lions that [illegible] many of his donkeys, but is singularly silent on the subject of the minerals. Another man whom you [illegible] in a hotel along the [illegible] has discovered some new and rare and extremely valuable mineral in a distant mountain range. He is [illegible] and truthful in regard to the precise location of this range, but is prepared to talk business. Another man wants to do a deal with some diamondiferous claims on the coast belt. Another has been shown gold by a Herero. All these people are full of optimism, but they are all frantically short of a little hard cash.

Concerning this Supplement.

A good many of these propositions are likely to prove to be disappointing, but on the other hand it can fairly safely be assumed that some of them, at any rate, sooner or later, will bear fruit. With a return to something approaching more normal times in the Protectorate, money should be available for the development of several of these enterprises; and it is with a view to affording information regarding South-West Africa's minerals in anticipation of that time that the present supplement is issued. We cannot claim for this production that it represents a complete survey of mineral activities and prospects in the Protectorate, but it is believed that the information contained within these few illustrated pages will prove of interest and of considerable informative value, and to those who seek more detailed information on the subject we would refer them to the various bulky volumes and reports that have been published at one time or another on the mineral industry of the Union's annexe, and particularly to the exceedingly informative Geological Survey Memoirs compiled by Dr Wagner. The bulk of the letterpress and photos contained in this supplement have been prepared by a special commissioner of the Journal, who has recently made two or three tours of investigation in the Protectorate. We are also glad to acknowledge the value of Dr Wagner's brochure in the preparation of these pages, and other material has been obtained from official sources and from the works of various travellers and geologists both British and German.

"Desert Diamonds."

THE ROMANCE OF THE LUDERITZBUCHT FIELDS—OPERATIONS AND PROSPECTS OF THE CONSOLIDATED COMPANY.

The operations of the Consolidated Diamond Mines of South-West Africa, which has recently resumed productive operations on a substantial scale as a result of the improvement in the diamond market, have been much hampered by washaways and by the epidemic in the Tsumeb, Otavi, Grootfontein and Ovamboland areas, from which the Company draws the bulk of its native labour. A few weeks ago Luderitzbucht was completely isolated from the main railway line on account of floods and washaways around Seeheim, but the Railway Administration has now succeeded in repairing the line between Luderitz and De Aar and the supplies and material necessary for conducting operations on a large scale are coming through again. It is expected that the Consolidated Diamond Mines Company will be securing an output of 15,000 carats per month in the near future and further expansion of production up to a substantially larger output can be secured without difficulty, provided, of course, that the condition of, and outlook for, the diamond market warrants it.

The C.D.M. Company's Plans.

With a view to increasing the output of this Company it may be remarked that the erection of a further large plant at Elizabethbucht, 30 kilos south of Luderitz, is under construction, and should this be installed further plant will probably be erected at the Luderitz Power Station.

This Elizabeth Bay plant will to a large extent be made up of the equipment of the "Fiscus" plant, which lies a mile or two from Kolmanskop.

Portion of the "Central" Plant at Kolmanskop.

Near Kolmanskop is the central plant of the Consolidated Diamond Company, and close to the offices and living quarters are very well equipped workshops, carpenters' and blacksmith's shops, etc. An electrically operated railway runs from the Kolmanskop headquarters to the various points where the diamondiferous ground is being exploited and into the central plant. This line is of 60 centimetre gauge. Water is pumped from Elizabeth Bay along the diamond fields by means of pumps electrically operated by H.T. current. Fresh water also is brought to Kolmanskop from Garub, near Aus, on the Keetmanshoop line. Water is therefore an expensive item; on these fields the cost is about 15s. per cubic metre.

At the Ko'manskop Workings.

At the Central Plant the diamondiferous deposit is transported by Bleichert aerial gear and tipped into bins. From these it is automatically fed into preliminary breakers, rolls and sieves. Sizing operations are conducted in trommels and Siechiel separators. These latter machines have been developed by the South-West African diamond industry and have proved most efficacious for the recovery of the gem stones from the diamondiferous gravel.

Some new photographs illustrating methods of working on the Kolmanskop fields and the Power Station at Luderitzbucht appear on the frontispiece of this number.

How the Diamonds were found; History of the Industry in Brief.

As recently as 1908 the existence of diamonds on the South-West African littoral was unknown. In that year gem stones were discovered during railway construction operations, and the establishment of this industry along the dreary, wind-swept reaches of the coast constitutes one of the most remarkable of Southern African mineral developments during recent times.

Recent exploratory operations have added considerably to the known area of the fields which may now be said to have an extent established by actual working of 300 miles from a spot a little north of the Orange River to between Conception Bay and Swakopmund, although there are along this belt wide stretches in which diamonds have not been found. Both the width of this belt and the depth of gravel vary considerably over different areas, but whereas the Germans did not expect the fields to last more than about 15 years, it is now realised that the Consolidated Diamond Mines Company and other concerns engaged in mining precious stones deposited along this sterile coast line by alluvial and eluvial action, have still a vast amount of diamondiferous gravel to treat, and the operations of these enterprises cannot fail to have a marked influence on the state and security of the diamond market for a good many years to come.

The diamonds from these fields are generally small in size, but of good quality. Generally speaking, they average about 5 or 6 to the carat, but some time ago a fine stone 35 carats in size was found in the vicinity of Bogenfels.

The productive potentiality of these fields can be gauged from the fact that up to the outbreak of the Great War the Germans had produced from these areas 5,400,000 carats of diamonds having an approximate value of £9,250,000.

The Kolmanskop Diamond Fields.

After the South-West African campaign diamond mining operations were resumed in 1915, and in that year 13,409 carats from the Kolmanskop, Charlottenthal and Elizabethbucht areas were sold for £34,000. In 1916 the value of production increased to just under a third of a million sterling. In 1917 it amounted to £831,000, and in 1918 to £749,000, whilst in the year after the Armistice—1919—there was a big advance to an output of 462,180 carats of a total value of a million and a half sterling. Shortly afterwards the Consolidated Diamond Mines of South West Africa—an off-shoot of the Anglo-American Corporation of South Africa—obtained control of the bulk of the principal productive areas. The Company remodelled the various plants and speeded up output and prepared for a production up to the limit of the Company's quota of output, but unfortunately the great slump in the market upset these plans, production was greatly curtailed instead of being increased, and only recently, in view of the better outlook, has it been decided to augment the scale of operations.

PRESERVATION OF MINE TIMBERS.

In a recent issue of the "Journal of the S.A. Institution of Engineers," Mr. H. B. Stephens refers to the use of fluorine compounds in the preservation of wood. Most of the wood preservative processes are fairly well known, he says, but it may be of interest to refer to a comparatively new process which he has recently seen described and experiments with which were commenced in Europe some 18 years ago. This is the Wolman process, in which wood is impregnated under pressure with a mixture of various salts; the composition of this mixture is a trade secret, but the principal components are fluor salts. There are said to be about 80 impregnating works that are using this process in Europe, and numerous testimonials and official reports are quoted testifying to the satisfactory results achieved by the method. The proprietors claim that this process is especially suitable for mining timber, and to have proved that it is considerably cheaper and more suitable in every way than creosoting or any other method of preservation, and that it even adds to the strength of the wood. Unfortunately no figures of costs of treatment are given, but it is claimed, as an example, that whereas 132 to 175 lb. of creosote would be required for the impregnation of one cubic metre of wood, 9 lb. of Wolman salts would achieve the same results. In this connection it may be mentioned that sodium fluoride, as a result of extensive experiments which yielded very satisfactory results, has been put into use on a commercial scale for wood preservation in the United States during the last five or six years.

Karibib Marble.

THE OCCURRENCES IN THE DERNBURG AND CAPARA BERGS—A HIGH GRADE PRODUCT—VALUABLE ELECTRICAL MACHINERY—AN INDUSTRY WORTH RESUSCITATING.

The Karibib marble deposits first attracted the attention of Europeans during the Herero revolt of 1903-4. No serious work was, however, undertaken in regard to their development until 1911, when a Company styled The Afrika Marmor Gesellschaft was formed, with a capital equivalent to £150,000, to exploit the deposits.

One of the Big Electric Cranes, Karibib Marble.

Ranges of Marble near Karibib.

During the period of the German regime this company carried out a large amount of work and spent very considerable sums of money on the development and equipment of the quarries and on a light railway designed to bring the marble from the quarries to Karibib. The company had only just completed their various and expensive installations and had established the business on a satisfactory footing when the Great War broke out in 1914.

The deposits occur in the form of hills of substantial height and extent, which traverse the limestone formation of this portion of South-West Africa, and the marble deposits are very extensive. The two quarries opened out to date are situated at distances of about two and seven miles respectively from Karibib.

The quality of the marble produced by the quarries is undeniably good and its characters appear to be consistent over large areas. It is large grained, generally free from flaws, cracks and blemishes, and occurs in a profusion of types. No less than 80 kinds and grains of marble, of which 11 different types have so far been worked, have been noted. Some very beautiful articles of commerce and ornament have been manufactured from the marble produced by these quarries.

The Power Plant of the Marmour Gesellschaft, Karibib.

Scene at a Karibib Marble Quarry.

There are two quarries: (*a*) The larger quarry in a hill known as the Dernburg Berge, situated about 7 miles to the west of Karibib; and (*b*) the smaller quarry, situated in what is known as the Capara Berge, situated about two miles N.N.W. of Karibib. At each of these quarries a large amount of work had been done and immense tonnages of marble have been exposed. The method of excavating the actual blocks is by means of "chain saws," in which endless wire ropes cut out the blocks to the sizes required for marketing.

The company possess four cranes for working the quarries. Two of these are each of 30 tons capacity, and the other two are each of 10 tons capacity. One of these big cranes has been erected at the large or "Dernburg Berg" quarry, and is depicted in the accompanying photograph. The large quarry is also equipped with a Tangye oil engine, Siemens dynamo and pump, and with numerous other items of machinery spares and buildings, etc.

Both quarries are linked up with Karibib by means of light electric railways. At Karibib an immense amount of plant and spares, housed in well-constructed buildings, is to be observed

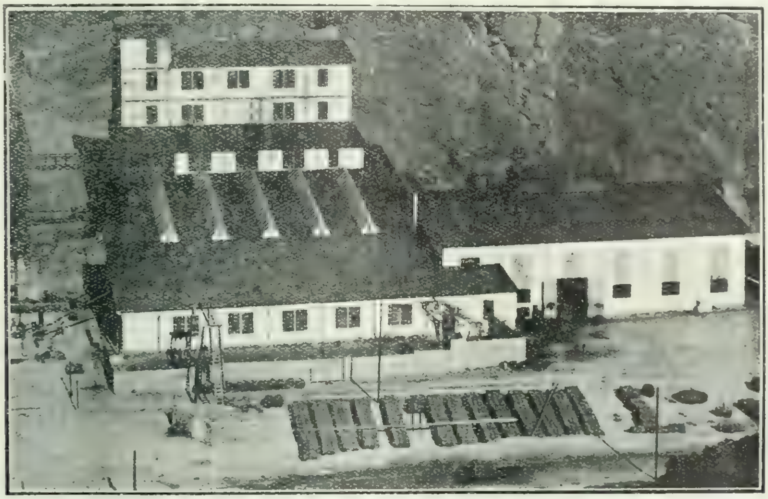
The Khan Copper Mine.

SECOND MOST IMPORTANT CUPRIFEROUS VENTURE IN THE PROTECTORATE—A LOW GRADE PROPOSITION WITH SUBSTANTIAL AND UP-TO-DATE PLANT—THE ORE BODIES DESCRIBED.

Seven miles to the south-east of Arandis Station, on the Swakopmund-Usakos section of the broad gauge railway, is the Khan Copper Mine. Next to the Tsumeb Mine, in the north-eastern portion of the Protectorate, the Khan occurrences have always been regarded as constituting the most important cupriferous venture in South West Africa. But the Khan is not nearly such a rich venture as the famous mine in the Grootfontein district. It is like many other copper propositions in other parts of the world, a comparatively low grade venture containing on the average no more than 4 per cent. of metal; and whilst Tsumeb, despite its much greater distance from Walfish Bay, has been producing practically without interruption, since the resumption of industry in the country after the South West African campaign, the Khan Mine Company has not resumed work and is understood to be in liquidation.

How the Ore Occurs.

The cupriferous occurrences at the mine, which occur in the valley of one of the minor tributaries of the Khan River, are described by Dr P. A. Wagner in his valuable memoir on South West Africa as being of magmatic origin, and he says that the deposit consists of an inclined vein of coarse-grained copper-bearing pegmatite, in gneiss. The vein strikes approximately north and south and dips to the west. Near the surface the dip is about 70 degrees, but at depth it



The Khan Copper Mine's 50-Ton Treatment Plant.

Khan Copper; Substantial Mine Buildings.

becomes less, and in the lower levels of the mine it is only [illegible] degrees. The ore-body has been followed over a length of about [illegible] feet and has been opened up to a depth of [illegible] feet on the incline. It ranges in width from 8 inches to 7 feet, the average being about 3 feet, and in the northern portion of the main orebody an average of about 7½ per cent. of copper. In the southern part of the orebody the copper content is much lower. The copper minerals noticed in the order of their abundance are bornite, copper-glance, chalcopyrite and malachite. Apart from these minerals, the pegmatite consists of red and green feldspar, quartz, green pyroxene and titanite, the minerals being present in fairly considerable quantities. The pyroxene occurs in lath-shaped crystals, which are frequently grouped in radial aggregates. In some portions of the ore-body this mineral is so abundant that the pegmatite practically becomes a pyroxene rock. Epidote, garnet, mica, and titanite are also generally present. The bornite, which, as previously indicated, is by far the most important copper mineral present, appears to be an original constituent of the pegmatite and was, according to Sutton, the last mineral in the rock to crystallise. It is generally accompanied by chalcocite. Whether the latter is primary or secondary has not as yet been established. Chalcopyrite is not, on the whole, very common. It appears, like the bornite, to have crystallised direct from the pegmatite magma. Malachite is confined to the superficial portions of the deposit. Zincblende is present in some parts of the ore-body.

A 50-Ton Plant.

A considerable tonnage of ore has been blocked out and an up-to-date crushing and concentrating plant erected in 1913 and 1914 was in operation for some months prior to the outbreak of the war. It has a capacity of 50 tons per diem. A concentrate, containing from 60 to 70 per cent. of copper, was being made and shipped to Europe in large drums.

Tsumeb: A Great Base Metal Producer.

SOUTH-WEST AFRICA'S LEADING METALLIFEROUS MINE—LARGE EXPORT OF COPPER THROUGH WALVIS BAY.

Nowadays any traveller passing through Walvis Bay cannot fail to observe large quantities of high-grade copper ore lying alongside the wharfs and awaiting transport to Europe. In the past few months production appears to have been intensified, so that the controlling company should be reaping rich rewards from exporting ore to Hamburg with the metal at its present price.

The Ore Bodies Described.

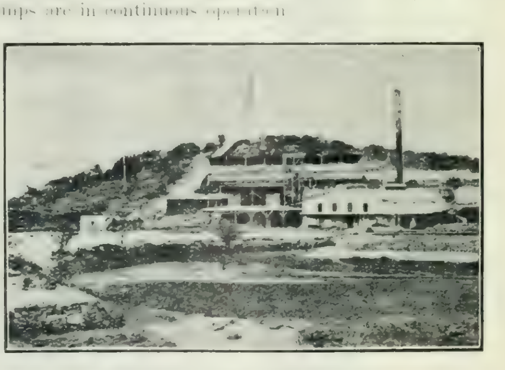
The rich ore-deposit at Tsumeb consists of two large ore-bodies in the Otavi Dolomite series. Dr. Wagner says that the ore-bodies, as well as the aplite, are intersected by narrow dykes of highly altered olivine-kersantite. The ore is generally separated from the dolomite by a clayey selvage, and in the hanging wall of the deposit several fair-sized cavities were met with. The strike is from east to west. The dolomite forming the country rock is much folded and disturbed. It has undergone secondary silicification, but it appears very doubtful whether this silicification has anything to do with the genesis of the ore-deposit. In the vicinity of the ore-deposit the dolomite is traversed by narrow veins and stringers of chalcocite. The aplite is a fine-grained rock composed of quartz, felspar, and minor quantities of mica. In the lower levels of the mine the rock is strongly impregnated with ore, and much of it will repay exploitation.

The ore of the main bodies, as mined at depth, is a massive, coarsely crystalline aggregate, composed in variable proportions of argentiferous galena and chalcocite, accompanied by zincblende, pyrite, enargite, stibioluzonite, and in the lowest level of the mine by chalcopyrite. Masses of fairly pure galena and chalcocite also occur. Of the aforementioned minerals the galena, chalcopyrite, enargite, pyrite, zincblende, and Stibioluzonite appear to be original constituents of the ore-bodies. The copper-glance, on the other hand, is clearly of secondary origin. It is found replacing the primary sulphides and appears to have been deposited from descending solutions which derived their copper content from the decomposition of originally overlying portions of the ore-deposit, since removed by denudation. In the upper levels of the mine the oxidation of the previously mentioned sulphides has given rise to the formation of all manner of secondary minerals, including malachite, azurite, cuprite, chrysocolla, dioptase, olivenite, brochantite, linarite, cerussite, anglesite, limonite, smithsonite, calamine, hydrozincite, aurichalcite, mottramite, and ernite.

The massive sulphide ore contains no gangue, but the microscope shows that even the most compact specimens invariably enclose fragments and particles of dolomite, and larger inclusions of this rock in various stages of replacement are met with in both ore-bodies.

Methods of Mining and Treatment.

To a depth of about 90 feet the Tsumeb Mine was worked open-cast. Below this depth a system of overhand cross-stoping with concomitant waste-filling has been resorted to. The mine is served by a rectangular vertical shaft, equipped with a steel head-frame and a powerful geared steam hoist. A good deal of water has been struck in the lower levels of the mine, and two large electric pumps are in continuous operation.



A Portion of the Tsumeb Plant.

Prior to the outbreak of the war the method of treatment consisted in classifying the ore hoisted to the surface by hand-picking into: (*a*) a high-grade copper product, which was bagged and shipped to America, it having been found that it pays to export for treatment all ore containing over 10 per cent. of copper; and (*b*) lead-ore—mainly galena—and low-grade carbonate copper-ore, which were trammed to the local smelter. The latter is equipped with two rectangular water-jacketed blast furnaces, measuring about 10 feet by 3 feet at the tuyeres. The lead and low-grade carbonate copper-ore were fluxed with hæmatite and locally quarried limestone, and smelted with Westphalian coke for the production of a copper lead matte and pig lead. During the year 1913-14 only matte was produced. It averaged from 45 to 50 per cent. of copper, from 25 to 30 per cent. of lead, and from 15 to 18 oz. of silver per ton and was exported to Germany for further treatment.

As the classification of the ore by hand was at best an unsatisfactory process, a large modern dressing plant was erected during 1914. The plant is equipped with rolls, jigs, concentrating tables and buddles.

Recent Operations.

During eight months ended November 30, 1921, shipments totalled 26,000 tons ore, 1,100 tons copper matte, and 200 tons metallic lead. Estimated ore reserves 758,000 tons.

The Otavi Exploration Syndicate, Ltd., has been formed to carry on prospecting operations and has located and opened up copper-lead discoveries. The Capital is £800,000 in £1 shares, all the shares are issued and fully paid. The capital was originally 1,000,000 marks in 10,000 shares of 100 marks each and 200,000 deferred shares of no face value but entitled to share equally with ordinary shares after paying 5 per cent. to reserve, 5 per cent. dividend on ordinary and 10 per cent. bonus to directors. In May, 1903, it was increased to 20,000,000 marks and in January, 1907, 30,000 shares of 100 marks each were offered for subscription in Hamburg and a similar number in London at 145 marks (£7 5s.) per share. On the sale of the railway in 1910, 80 marks per share were repaid, reducing the capital to 4,000,000 marks in 200,000 shares of 20 marks each. In November, 1920, the Union of South Africa having assumed control over South-West Africa, it became necessary to convert the capital into sterling, and in September, 1921, it was decided to increase the capital to present amount by creation of a further 600,000 new shares of £1 each, 200,000 of which were issued in redemption of the 200,000 deferred shares and 200,000 in exchange for each ordinary share of 20 marks plus a cash bonus of 20 marks for each old ordinary share converted, the remaining shares, viz., 100,000, being taken over by a syndicate and offered to both deferred and ordinary shareholders at 25s. each.

On the Narrow Gauge of the Otavi Railway.
Copper ore in transit from Tsumeb to Walvis.

Coke has recently been obtained from the Dundee Coal Company's By-Product Plant at Waschbank, Natal.

Cassiterite in South-West Africa.

Opening up a Tin Lode at Paukwab, near Okombahe.

Tin in the Protectorate.

PROMISING CASSITERITE VENTURES—PRODUCTION ON THE INCREASE—LODE AND ALLUVIAL VENTURES—THE ERONGO TIN BELT.

Next to diamonds and the copper and lead mineral activities of the Tsumeb Mine the branch of the mineral industry in South-West Africa, which, perhaps, holds out the greatest prospect of expansion in the near future, is that of cassiterite winning. Tin, both in lode form and as detrital matter, occurs over an extensive area of Damaraland, and particularly so in the Omaruru district in and around the Erongo mountains.

For some months past there has been a fairly steady but small production of cassiterite from alluvial deposits in these localities and latterly interest in the tin-bearing areas has been stimulated by discoveries of tin stone both in lodes and gravel. The purchase of the Kubas property by the Central Mining and Investment Corporation also tended to draw attention to the stanniferous areas of the Protectorate.

Some time ago flotation of the Protectorate Exploration Company in East London gave a fillip to base metal enterprise in the territory. This company, which had a capital of £10,000, purchased the tin claims in the Paukwab mountain, situated in the Okombahe Reserve, about 76 miles north-west of Karibib. The concern was some time ago reformed as Paukwab Tins, Ltd., and preliminary exploitation of this property is proceeding. At several places in this area, lode and alluvial tin deposits have been worked, and concentrates have been shipped through the banks to the smelters in the Straits Settlements.

At Ameib a two-foot bed of alluvial is being worked by Mr Hensel and a concentrate of about 70 per cent. value is being shipped through the National Bank to the Straits Settlement.

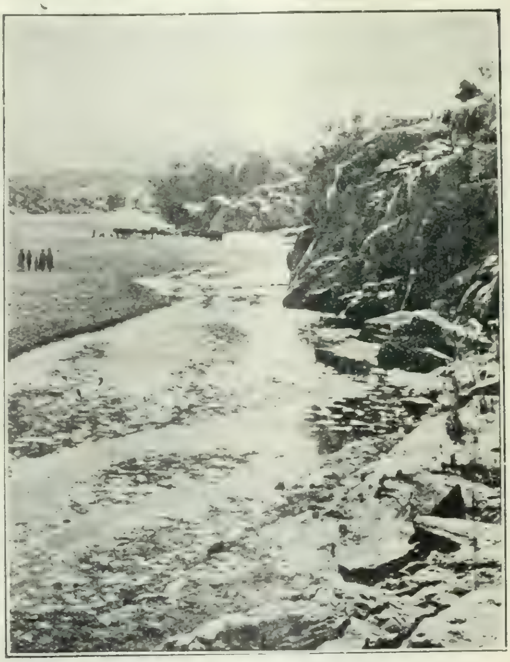
Messrs. Folkers, Schmidt and Goulding are also working cassiterite deposits in this locality. At Davib a company styled "The Goabeb Tins, Ltd.," which was floated in Johannesburg some time ago with a capital of £6,000, acquired base metal claims.

Other discoveries have been reported in the Erongo Mountain.

The origin of all this shed tin is probably to be sought in the Erongo mountain. This granite-complex intruded into the crystalline schists in the shape of large bosses, intrusions of pegmatite, dykes of fine grained granite and lodes of pegmatite and greisen. Most of the granite and pegmatite dykes have been altered into greisen, a rock consisting of quartz, white or grey mica, and often tourmaline, sometimes with the addition of topaz and other associates of tin. The intensity of the denuding and eroding forces which have been at work in this part of South West Africa, in which semi-desert conditions prevail, cannot fail to impress the geologist, and even the casual visitor. One sees huge bare mountains rising from low undulating flats, the latter consisting of mica schists and quartzites, the former for the greater part of granite. The masses formed by this rock take the shape of steep, bald domes surrounded at their base by accumultaions of large fragments and boulders of granite which have become detached from the main mass and which have slid or rolled down the bare rock surfaces. Away from the mountains, smaller peaks protrude above the surrounding undulating country. These are remnants of huge masses once part of the main mountain range, but now detached from them through the combined actions of wind, heavy sudden rains, and the disintegration of huge rock slabs through heating of the massifs by the rays of the sun and rapid cooling at nights.

Crude Methods of Treatment.

The method of treatment adopted at these Erongo tin properties is extremely primitive. The stanniferous gravel is subjected to a crude method of dry concentration in scoop-shaped wooden dishes. Native women are largely employed on this work. The fine sandy dust is winnowed by letting the material fall to the ground, and the rough gravel is then concentrated by hand. The women use these wooden dishes very much as the gold prospector employs a pan. They impart a circling rotary motion to the dish, which gives a fairly good separation of the heavy stanniferous gravels from the worthless material.



The Omaruru River near Okambahe.

Lack of water renders such primitive methods necessary, and it goes without saying that a large percentage of metal remains in the tailings. Nevertheless, fair profits are being made on these fields. At Paukwab 4 ft. 6in. rotary pans have been in operation. The recent substantial advance in the price of tin has given a considerable stimulus to this branch of mineral activity in South-West Africa and the production is considered to be increasing.

MICA AND MOLYBDENIUM IN S.W.-A.

According to Dr Wagner muscovite, in plates and books up to eight inches in diameter, occurs in veins and lenticular bodies of pegmatite and pegmatic quartz to the north and south-east of Klein Kharas in Great Namaqualand. A fair amount of exploratory work was done on the deposits, but the mica proved to be too badly flawed to be of any commercial value. The same authority states that he has seen fine specimens of molybdenite from a pegmatite vein to the south of Usakos and also from a deposit said to exist in the Kuiseb Valley near Walvis Bay, but has not been able to glean any definite information in regard to either of these occurrences. Range mentions the occurrence of molybdenite in granite at Aus and also in the Yellow Hills in the Warmbad district.

Mining Laws of S.-W. Africa.

USEFUL DIGEST OF REGULATIONS—A SIMPLE CODE WHICH IS FAVOURABLE TO PROSPECTORS.

The mineral laws of the Protectorate are favourable to prospectors, and, as they are not generally known, the following brief digest of the ordinances seems worthy of publication.

The hereinafter mentioned minerals are excluded from the right of disposal of the owner of the land. They can only be prospected for and won in accordance with the provisions of this Ordinance.

A. Precious Minerals.—(1) Precious metals (gold, silver and platinum). (2) Precious stones.

B. Base Minerals.—(1) All metals not mentioned before, in their native state and as ores. (2) Mica and semi precious stones, as well as asbestos. (3) Coals, salts and valuable earths, namely: (a) Coal, brown coal and graphite; (b) bitumen in solid, liquid or gaseous form, especially rock oil and asphalte; (c) Rock salt and the salts occurring in the same deposit and salt wells; (d) earths, which are valuable owing to their sulphur contents or for the production of alum, vitriol and saltpetre; (e) mineral phosphates.

Section 10.—It shall be lawful for any person to search for the minerals mentioned in Section 1 in their natural state upon a prospecting licence issued subject to the provisions of the Ordinance by the Magistrate of the district in which such person desires to prospect. Such licence shall specify the areas in which prospecting is permitted thereunder. The fee payable for such licence shall be two shillings and sixpence for each month or part of a month of the period thereof. No such licence shall be granted until such person has given security to the satisfaction of the Magistrate for the restoration to a safe condition of any property rendered dangerous and unsafe through such prospecting. Such person shall be bound so to restore any property so rendered dangerous or unsafe.

Section 12.—A prospector may demand the cession of the use of ground belonging to others, required for the construction of buildings, roads, dumps, storehouses and warehouses, and for grazing, as well as the water and wood thereon, in so far as such cession is necessary for the prospecting operations, but grazing, water and wood only in so far as such cession can take place without materially interfering with the working of the place. In order to obtain the cession of such use with regard to cultivated land the prospector must negotiate with the person entitled to the use or his representative with a view to an agreement. The prospector cannot demand the use of the ground or soil whereon residences or farm buildings are erected and the gardens and enclosed yards connected therewith.

Section 20.—The prospector must pay compensation for any damage done to ground or its appurtenances through prospecting operations.

Section 23.—A prospecting claim in its horizontal extension shall have the form of a rectangle, subject to any curtailments owing to rights of third parties. The area of such rectangle shall not exceed 400 metres by 200 metres where the claim is for precious minerals, or 1.200 metres by 600 metres where it is a base mineral claim.

Section 24.—The pegging of the prospecting claim must be done in such a way that a distinctly recognisable beacon is erected and maintained in a conspicuous place, if possible in the middle of the prospecting claim. On the beacon must appear in durable writing: (1) Name of prospector; (2) the nature of the prospecting claim (prospecting claim for precious minerals or base minerals); (3) the date and hour of erection of the beacon; (4) a number to distinguish the claim from any other claims pegged off by the same prospector in the same district.

Section 27.—A prospecting fee of ten shillings shall be payable monthly in advance in respect of every precious mineral claim, and a prospecting fee of five shillings shall be payable monthly in advance in respect of every leased mineral claim.

A prospector can at any time, even without proving a discovery, demand that his prospecting claim or any part thereof be converted into a mining area. The application for conversion must be made to the mining authority, stating the name which will be given to the mining area. The application must be accompanied by a diagram, together with a description showing the situation and extent of the mining area. The Administrator may declare any other authorities to be competent to receive the application for conversion.

Section 38.—When minerals in Section 1 have been regularly won in the prospecting claim, or when the prospecting claim has been kept closed for two years, the mining authorities can undertake the conversion even against the will of the prospector. Otherwise it can declare the closure of the prospecting claim to have ended.

Section 57.—Every mine owner shall be bound within two years from the date of his record to begin or cause to be begun regular mining operations appropriate to the character of the mineral deposit, and to continue the same or cause them to be continued without interruption, save where prevented by circumstances for which he is not responsible. The mining authority may extend the period within which this obligation shall be fulfilled.

Section 63.—The yearly tax is: (a) For mining areas for precious minerals, 30s. per hectare; (b) for mining areas for base minerals, 1s. per hectare; with a minimum of 30s. for every mining area per annum.

Section 64.—The output royalty amounts to two per cent. of the value before treatment of unwrought minerals (Sec. 1). The Administrator can in general or with regard to certain minerals issue special instructions as to how such output royalty should be calculated. Payment must be made half-yearly, beginning on the 1st April and 1st October respectively.

Any person who makes default during two months of any payment due in respect of claim tax or output royalty shall be liable to a penalty equal to one-fourth of the amount due. On becoming liable to such penalty such person shall be summoned to make payment.

Section 65.—Where any of the minerals mentioned in Section 1 are won on surveyed land in farming use, the Administrator will allow the owner thereof on his demand one-fourth of the mining royalty paid under Section 64, provided that the whole of the surface and subsoil whence the mineral is won belong to the said land. Where the surface or subsoil whence the mineral is won belongs only in part to the said land, the owner of such land shall participate in the mining royalty only in the proportion of such part.

In bad times, when you cannot afford a whole-time draughtsman

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The Fuel Problem in S.-W.A.

A COUNTRY WITHOUT COAL—A FEW VALUELESS SEAMS DISCOVERED—WILL WANKIE BE LINKED UP WITH GROOTFONTEIN ?

The industrial development of the South-West African Protectorate has hitherto been greatly hampered through the absence of coal. At any rate no workable coal seams have as yet been discovered, and the prospect of linking up the great Wankie coal field in Matabeleland with the Protectorate via Grootfontein is a possibility of the future—perhaps the far future—which is often discussed in the Protectorate.

According to Wagner and German geologists, a few years back small bands of coal, up to 4 centimetres in thickness, were struck in dark Dwyka shale at Gariganus, situated about nine miles north-east of Keetmanshoop in the course of sinking a well. Prospecting pits and boreholes were at once put down all over the surrounding country, but, despite the fact that one of the boreholes, sunk at Auros, attained a depth of almost 500 feet and appears to have penetrated the Dwyka Series down to the basal tillite, no further discoveries were made. A number of boreholes put down to the east and north of Gibeon, where thin films of coaly substance occur in the Karroo Sandstones, were also unsuccessful; and the same applies to boreholes up to 330 feet in depth that were sunk in Auob Valley, near Stamprietfontein and Klein Naias.

Transport in South-West Africa.

That negative results were obtained in the neighbourhood of Keetmanshoop is hardly surprising, seeing that economically important seams of coal have not been found in the Dwyka Series anywhere in South Africa. The fact that nothing was struck in any of the boreholes put down in the Gibeon district indicates that there is likewise little probability of payable deposits being discovered in the Karroo Sandstone Beds. Altogether, the prospects of finding exploitable seams of coal in the southern part of the Protectorate do not appear to be very bright. The Karroo beds in the eastern and south-eastern portions respectively of the Gibeon and Gobabis districts and in the Warmbad district, however, still remain to be examined.

The Gateway of South-West Nakob: the Union-South-West Africa Border Station.

As regards the northern portion of South-West Africa, the sandstones and shales of the Kaokoo Formation, which are believed to belong to the Karroo System and have been thoroughly prospected, have yielded no indications of coal.

RAILWAYS IN THE PROTECTORATE.

The main railway lines in South-West Africa were built by the Germans at a cost of £6,000,000, have been taken over by the Union Government of South Africa, and, with later additions, run as follows:—

Northern Section.—Karibib to Walvis, 134 miles, 3 ft. 6 in. gauge. 2 ft. gauge line from Karibib to Tsumeb (250 miles) and Grootfontein (265 miles).

Southern Section.—Union border (near Nakop), 2,463 ft. above sea-level, to Karibib (656 miles) with branch line from Seeheim to Luderitzbucht (198 miles), all 3 ft. 6 in. gauge.

From Kolmanskop, 10 miles inland along the Southern Railway, a private 2 ft. gauge line runs south along the coast to Elizabeth Bay, 16 miles, Pomona and Bogenfels, 62 miles (from Kolmanskop), and serves a number of the diamond mines by means of short branches, with a total length of 74 miles.

The estimated profit from the railways by the German Administration, for the year 1914-15, was about £61,000. The estimates for 1914 provided for a line from Otjiwarongo to Outjo and thence northward to tap the labour supply of Ovamboland. Another line was to have been built east to Gobabis.

To facilitate the British invasion of South-West Africa from the South, Kalkfontein, the German railway terminus on the southern line, was hurriedly linked up (3 ft. 6 in. gauge) with the Union System, via Prieska and Upington. A standard gauge (3 ft. 6 in.) line was laid from Walvis to Swakopmund, a distance of 21¼ miles, and was opened in March, 1915.

The line from Otjiwarongo to Outjo has since been built and a start has been made on construction of the Gobabis railway.

ANSWERS TO CORRESPONDENTS.

"Holder."—We do not think that the shares are being purposely depressed, and on intrinsic merits consider them worth holding.

Latest Metal Market Quotations.

Standard copper, £72 17s. 6d. cash, £73 15s. forward; electrolytic copper, £81 seller's option, £81 10s. buyer's option, copper bars, £81 10s.; foreign lead, £26 prompt, £26 5s. forward; quicksilver, £9 17s. 6d.; bar silver, 32¾d.; bar gold, 88s. 8d. per oz.

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The Week in the Sharemarket.

IMPROVEMENT FOLLOWS WEAKNESS—DIAMONDS DULL, TINS ACTIVE—PROSPECTS OF GENERAL RECOVERY.

Early in the week the market developed excessive nervousness and with the assistance of all sorts of rumours the Bears forced prices down in nearly every case. The fall, however, was never dangerous, and the inevitable reaction has now set in. Barnato stocks were chiefly notable for the decline in Van Ryn Deeps, due to news from the quarterly report that development values were much down for the quarter. It is said that development was mostly in the western section of the mine. Nothing fresh can be said about Corner House stocks except that East Rands reveal surprisingly good values in the quarterly report, and Nourse Mines have again a better record of development. This latter stock was the first to recover the drop of the earlier part of the week. The Anglo-American Group have been quiet, with much less business than usual. General Mining stocks were in no way notable. Transvaal Silvers have remained steady without advance. Union Corporation stocks were marked by more inquiry for Gedulds. The new plant is now running and it is expected that the conservative tonnages mentioned by the House will be exceeded. The prospects of this share are now very bright.

Diamond shares have been neglected, and are mostly down in price. It is expected that the upward movement will be gradually resumed.

Tins were active, under the lead of Zaaiplaats, from which mine the news is most encouraging. It is said the lode continues to improve. The company is believed to be in a sound financial position.

Investment Stocks and Loans have been steady, without much business. Reserve Banks, after being sold, recovered to £140 on a little buying. A lot of money was used to meet differences from the drop in gold shares and the volume of business in Loans was relatively small.

Generally speaking, the past week has been an anxious one for the holders of shares. The drop brought out more business than usual and the reaction has found buyers ready to come in at the lowest levels. Quarterly reports are for the most part good. There is really nothing to upset the market, which should recover on merit, especially in view of the approaching dividend period.

	Fri. 20th.	Sat. 21st.	Mon. 23rd.	Tues. 24th.	Wed. 25th.	Thur. 26th.
Anglo-Am. Corp. . .	26 3	25 9*	25 6*	25 3*	24 10½	25 6*
Apex Mines	6 0*	6 6†	6 0*	6 0*	6 0*	—
Brakpan Mines . . .	70 0*	70 0*	70 0	68 6*	69 0†	69 0*
Brick and Potteries	2 6*	3 0*	—	—	3 0*	3 0*
Bushbeld Tins	0 3*	0 3*	0 3*	0 4*	0 4*	0 4*
Cinderella Cons. . .	4 0†	—	—	—	—	3 0*
City and Subs. . . .	—	—	—	—	3 0†	—
City Deeps	51 6*	51 0*	—	50 6*	50 9*	52 0
Clydesdale Colls. . .	—	—	17 6†	—	16 6†	—
Con. Diamonds. . .	25 0	24 4½	24 6*	24 3	24 4½	25 0*
Con. Investments. .	—	—	29 0*	—	—	—
Con. Langlaagtes. .	12 6*	12 9*	—	12 9*	—	12 6*
Con. Main Reefs . .	9 3*	9 0*	9 3*	9 3*	9 4*	9 6*
Coronation Colls.. .	21 6*	—	—	20 0*	—	20 0*
Do. Freeholds . . .	0 6*	0 6*	—	0 6*	0 6*	—
Do. Syndicates. .	7 3	7 3	7 1	6 10*	6 10*	7 2
Crown Diamonds . .	6 6	6 7*	6 6	6 2	6 1	6 6
Crown Mines	54 0	53 0*	53 0	52 0	52 0	53 0*
Daggafontein Mines.	3 2*	3 3†	3 1	3 0*	3 3	5 3*
Durban Rood. Deeps	16 9*	16 6*	16 6*	16 3*	16 3*	16 9
East Rand Coals . .	1 4*	1 4*	1 4*	1 4	1 4*	1 4*
East Rand Deeps . .	0 8*	0 8*	0 8*	0 8*	0 8*	0 8*
East Rand Minings.	—	—	10 6†	10 6†	—	—
East Rand Props. . .	—	5 4*	5 4*	5 3	5 0	5 0*
Eastern Golds . . .	0 6*	0 6*	0 6*	0 6*	—	0 6*
Ferreira Deeps . . .	6 6*	—	6 9*	7 6†	7 6†	6 6*
Frank Smith Dmds..	4 0	4 1*	4 1	3 9	3 11	4 0
Geduld Props. . . .	63 3	64 0	63 0*	63 0†	62 6	63 6
Glynn's Lydenburgs.	12 6*	—	—	—	12 0*	13 0*
Govt. Areas	109 0	108 6	107 6	107 0	107 6	109 0
Hume Pipes	9 3*	9 6*	10 0	9 9*	9 6*	9 9*
Knight Centrals . .	5 2*	5 2*	5 6	5 7	5 7	5 7
Lace Props.	8 6*	8 6*	—	8 6*	8 6*	—
Langlaagte Estates .	19 6	19 6	19 3	19 3*	19 0*	19 3*
Leeuwpoort Tins . .	4 0	4 0*	4 1	4 0	3 9*	3 9
Luipaardsvlei Est. .	5 0†	5 0†	—	4 6	4 0*	4 9*
Middelvlei Est. . .	1 3*	1 9†	1 9†	1 9†	1 0*	—
Modder B.'s	24 0*	24 0	23 9	23 6*	23 6	23 3*
Modder Deeps . . .	43 9*	42 6*	43 9	43 3*	43 3	43 6
Modder Easts . . .	7 0	7 3†	7 0	6 9*	6 9	
Natal Navig. Colls.	—	26 6*	—	26 6*		26 0*
National Banks . .	175 0*	180 0	170 0*	175 0	177 6	175 0
New Eland Diamonds	—		49 0†	—	40 0*	45 0*
New Era Cons. . . .	6 9	7 0	6 9*	6 10*	7 0*	6 10*
New Kleinfonteins .	4 6*	-	4 9	4 0*	4 6*	4 6*
New Modders . . .	78 0*	77 9	77 6	77 3	77 0	77 0*
New Primrose . . .	3 4*	4 0†	3 0*	3 6†		
New State Areas . .	38 3*	38 3	38 0*	37 3*	37 0*	37 3
Nigels	—	-	8 6*	—	8 9*	—
Nourse Mines	15 6*	15 6*	15 3*	16 0†	14 9	15 6
Pretoria Cements .	41 9	41 6*	41 0*	42 3	42 3*	42 0*
Rand Collieries . .	—	—	—	1 8†	1 0*	1 0*
Rand Nucleus	0 10*	0 10*	0 10*	0 10*	0 10*	-
Randftn. Centrals .	14 6		—	14 0*	14 0*	—
Do. Estates	22 0	21 6	21 0	20 7	21 10½	21 7
Rouxville Diamonds.	1 6	1 4*	1 4*	1 4	1 6	1 6
Roberts Victors . . .		—	10 0†	10 0†	7 6*	—
Robinson Deep "A"	32 6*	32 6*	32 9	32 9	32 9	33 0
Robinson Deep "B"	11 6	11 6	11 6	11 0*	11 0	11 0*
Roodebergs	3 9*	3 6*	4 0*	3 9*	3 9*	3 6*
Ryan Nigels	4 0†	—	—	—	—	—
Shebas	—	—	—		3 9†	-
Simmer and Jacks .	3 3	3 2	3 1*	3 1	3 0*	3 2
S.A. Breweries . . .	30 0*	30 0*	30 0*	30 0*	30 0*	—
S.A. Lands	5 9*	5 9*	5 10	5 8*	—	5 6*
S.A. Reserve Bank .	—	—	£142†	£140†	£136*	£139*
Springs Mines . . .	48 3*	48 3*	48 0*	47 6*	47 6	48 6
Sub-Nigels	9 6*	9 6*	9 6*	9 6*	9 6*	—
S.A. Alkali	15 0	-	15 9†	14 0*	—	14 9*
S.A. Townships . . .	11 0*	10 6*	11 0	11 3†	10 6*	10 6*
Transvaal Lands . .	16 6	16 9*	—		—	—
Trans. G.M. Est. . .	8 3*	8 9	8 3*	8 0*	8 3	8 0*
Transvaal Silvers . .	14 3*	14 0*	-	14 6*	14 6*	15 6
Tudors	0 3*	0 3*	0 3*	—	0 3*	—
Union 5 per cent. .	£104½*	£104*	£104*	£104	£104½	£104
Van Dyks	1 6†	-	1 6†	1 6†	—	1 6†
Van Ryn Deeps . . .	70 0*	70 0	69 0*	68 6	68 6*	67 6*
Village Deeps	12 3*		12 6*	11 6	10 9*	12 0*
West Springs	19 0	18 9	18 4½	18 6*	18 1½	18 7½
West Rand Cons. . .	7 0†				—	—
Western Rand Est..	3 6	4 0†	4 0†	3 6*	3 6*	3 6*
Witbank Colls. . . .	31 6*	31 3*	31 3*	31 6*	31 0	30 3*
Witwatersrands . . .	—			14 6*	14 6*	14 9*
Wit. Deeps	17 0	16 10½	16 6*	16 3*	16 3	16 6*
Zaaiplaats Tins . . .	6 1	6 4	6 3	6 2	6 3	6 7

* Buyers. † Sellers.

Mozambique Concessions.

The Secretary of the Moçambique Oil and Mineral Concessions states that negotiations are now in progress with a view to an application being made to the committee of the London Stock Exchange for permission to deal in the shares of the company.

The Managing Director, Captain Lionel Cohen, D.S.O., M.C., left for the company's territory in Moçambique and will be followed by Mr. William H. Goodchild, A.R.S.M., M.Inst.M.M., F.G.S., the well-known mining geologist, whom the directors have engaged to advise as to the programme to be followed in the active development of the properties; in this connection two "Banks" drills have already been despatched to Angoche. Mr Goodchild will be accompanied by Mr. Hugh Gemmell, A.I.M.M., one of the leading practical gold dredging experts in Great Britain.

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Rhodesian Mining Prospects.

By F. P. Mennell, F.G.S., M.I.M.M.

Various projects have been discussed for the artificial stimulation of prospecting, and the matter is one which is deserving of consideration. At the same time it is none the less welcome that there are strong signs of a revival induced, not by Government action, but as a result of the way things are moving both locally and in the distant lands where the prices of our products are controlled. Nothing would be of greater help to the country than a few really important new discoveries. But new discoveries are not made if there is no market for them, and unless there is a certain amount of confidence no one will invest money in the necessary development work without which it cannot be proved that one has made a valuable discovery at all.

Mr. J. G. McDonald, in his recent address to the Chamber of Mines, pointed out certain encouraging features as regards the future of the industry. One is that our output of gold has kept up in spite of all adverse circumstances, and another that the fall in the premium has been counterbalanced by the economies rendered possible in other directions. There were some points which could scarcely be touched upon in a statement of the kind, which are, however, equally important in considering the immediate prospects of the industry. If one takes up, for instance, the latest issue of one of the leading mining periodicals to hand by the mail one finds the following quotations of Rhodesian stocks when the mail left as compared with a year ago:—

	1922	1923
Cam and Motor	7/3	2/7/6
Falcon	3/6	10/0
Gaika	9/0	14/6
Globe and Phoenix ...	11/0	17/0
Lonely	2/1/3	1/11/3
Rezende	2/2/6	3/5/0
Shamva	1/8/9	1/10/0

At the precise moment of writing these quotations have been altered—some are up and some are down—but the fact remains that apart from the Lonely all these leading gold mines are valued more highly by the Stock Exchange than they were twelve months back. On top of this it will be noticed that the time is considered propitious for the issue of fresh capital to further equip those great base metal propositions in Northern Rhodesia, the Bwana M'Kubwa and Broken Hill. True, these last are outside our boundaries from a political point of view, but the share market knows no such fine distinctions, and as far as that goes any expenditure in the north soon shows its effects down here, indeed we stand to benefit largely by the increased activity which Mr. Robert Williams's visit foreshadows in the Congo. I venture to think that the French occupation of the Ruhr, so disturbing to confidence generally, has alone prevented something in the nature of a boom in mining shares, and it is probable that this is only delayed and not deferred altogether. And while it is perfectly fair to say that booms have a way of leading to an unpleasant slump through an almost inevitable process of reaction, they also leave behind a legacy of capital available for genuine development work, even if but a small proportion of what investors and operators have actually put up for the purpose.

Another feature of the outlook which is perhaps of even greater importance may be touched upon here. In my opinion Rhodesia is likely to figure much more largely in the future as a producer of the so-called "base" metals and minerals than it has ever done as a producer of gold. It is therefore very encouraging to see that a favourable turn has at last been taken in the metal market, copper, lead, zinc, etc., all having risen very markedly in recent months. The prospect for asbestos is also brighter, and I am told that there promises to be a very active demand for mica, of which there are such excellent deposits in the Lomagundi district.

It seems, therefore, that we have a number of factors all tending to give what is still our premier industry that push forward for which we have so far waited in vain since the war.—"Bulawayo Chronicle."

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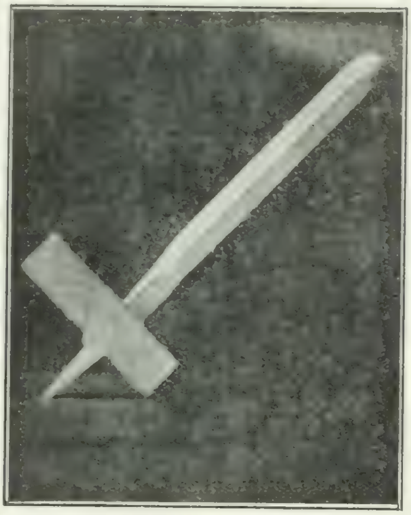

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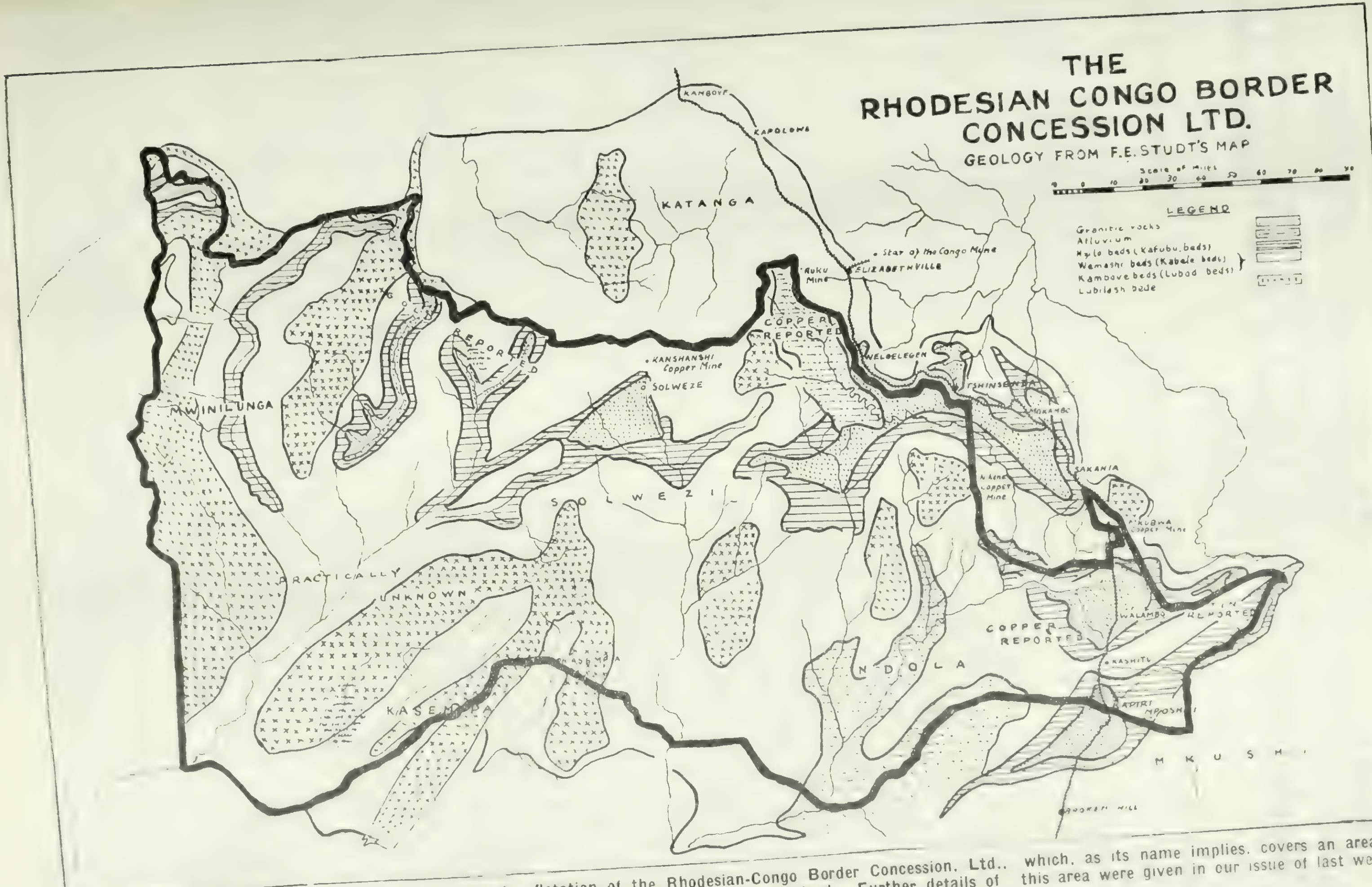

In our issue of March 24 particulars were given of the flotation of the Rhodesian-Congo Border Concession, Ltd., which, as its name implies, covers an area of 50,000 square miles in Rhodesia on the Congo Border, which is believed to be highly mineralized. Further details of this area were given in our issue of last week. The Concession is shown in the above map.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET—IRON AND STEEL CONDITIONS—TIMBER AND BUILDING MATERIALS—METAL MARKET QUOTATIONS.

General.

Business this week has been exceedingly quiet, not only in town but throughout the country. It is difficult for merchants to account for the present dullness apart from the European position, which continues uncertain. Leaders in the commercial world this week think that the suggestion of Lord Curzon that the time is opportune for Germany to make some substantial offer in respect to repatriations is a sound one, and on which, notwithstanding the present chaotic conditions, there appears some foundation to build up a satisfactory settlement. In the opinion of the commercial world the feeling is growing that Germany is at long last *tired* with the present conditions and will shortly capitulate. This is as may be, but business here is, of course, being hung up on account of the present incertitude of European affairs. Apart from outside influences, one gleam of hope is apparent in the Government's intention to sanction a cattle deal, which, if effected, will amount to about £500,000. This should be a big boon to the farming community and indirectly affect commercial activities in Johannesburg.

Prices locally are beginning to reflect the recent home advances, but owing to large stocks and keen competition advances up to now are not big.

Iron and Steel.

An influential merchant this week said things were very quiet, as, as a matter of fact, they always are at this time of the month. In his opinion the adverse results of the mines' showing of the first quarter of 1923 did not tend to stimulate the mines to buying more than they are now doing. The cost of stores, he said, will undoubtedly increase owing to the Continental position and will, unfortunately, bring many properties to the danger line. This important merchant said his firm was pursuing a very conservative policy as regards stocks to-day. He would rather be without certain lines to-day than see stocks accumulate for which an ultimate market was dubious. Of course, he said, all this is tending to keep prices lower now than replacement values. He stated, as a matter of curiosity, that a lot of competitive lines where Germany was the principal bone of contention, had not only been less firm in price but had actually declined, owing to abundant stocks in town. Stillson wrenches, for instance, are going for lower than we are able to sell at when the present stocks are exhausted. These wrenches are selling now at 14in., 60s., and they cannot possibly be landed from America to-day under 66s. 6d. But he said, in explanation of the present position, many people are realising to-day regardless of the international position, owing, possibly, to obligation to meet bills and reduce expenditure. Wheelbarrows are fetching 29s. 6d., and this important merchant had received a cable this week that these barrows had advanced 20 per cent. in price in America without, however, any result on the local market up to now.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge 6 x 3 and 8 x 4, ¼, 3-16 and ⅛ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s.; chequer plates, 27s. 160; lb.; imported flats, ½ x 3-16, ¼ x ¼, 30s. per 100 lb.; ⅝ x ⅝, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅝, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. lb.; phosphor tin, 2s. 9d. lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¼d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 60s. and upwards; barbed wire, "Shortthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

MAIL NEWS—BRITAIN.

Iron and Steel.

The market situation in mail week was difficult to gauge. The prices at the moment for many descriptions of iron and steel vary to such an extent that there was practically no market price, particularly for steel available for near delivery. Continental material was almost impossible to place, and, owing to the excellent domestic demand in the United States of America, sources were depleted

Copper and Tin.

An upward movement of some importance, says the "Ironmonger" in mail week, is taking place in the copper and tin markets, due largely to the strong American demand. The world's metal markets at the moment are practically being carried on the back of the consuming industries in the United States. Hence the general tendency of the American markets is interesting. Looking back to the situation before the war, it is interesting to note the expansion in the consumption of copper and steel metals from 1902 to 1913. Omitting all references to the war years, it will be found that except in 1920 the curve of consumption of steel has continued in exactly the same degree as in 1902-1913 period, the line of copper has developed a much wider curve, indicating that the expansion in the consumption of that metal has increased very considerably compared with that of steel.

Recent Indian Locomotive Contracts.

British firms have secured the following Indian State Railways contracts, viz.: Armstrong, Whitworth & Co., Newcastle, 37; the Vulcan Foundry Co., Manchester, 55; Beardmore & Co., Glasgow, 27. The value of these contracts is over £700,000.

Cleveland Ironstone.

At a conference of Cleveland mineowners and miners at Middlesbrough, on March 20, the miners agreed, in view of the serious position of the ironstone mining industry, to reconsider their decision in regard to working hours in the mines. By a recent ballot vote the men rejected a proposal to revert to the 8 hour-day, with the result that many mines are still idle.

Pig Iron.

The position in this market in mail week was one of great scarcity. Midland irons were quoted at from £6 5s. to £6 10s., but even at these prices there was no prompt iron obtainable. The demand for hematite is still good and Scotch hematite is quoted at £6 5s. to £6 7s. 6d. f.o.b. Glasgow. The quotations for Scotch foundry have advanced and vary from 122s. 6d. to 125s. f.o.b. Practically no Cleveland iron is available for early delivery. There is a brisk demand for basic iron.

High Speed Tanks.

Vickers, Limited, who at their River Don works, Sheffield, recently built the first new high-speed tank for trial purposes, have received orders for the construction of about twenty of these machines at an approximate cost of £6,000 per tank. The new tanks are said to have a track-endurance of 1,000 miles, and a speed of 25 miles an hour, as against an average track endurance of 150 miles and speed of eight miles in the older models.

Barrow Works Close Down.

The works of the British Griffin Chilled Iron and Steel Co. at Barrow have just been closed down, owing to the depression in trade and keen Continental and American competition. The works were chiefly employed in the manufacture of chilled wheels for railways and tramways.

New Spelter Activity.

The National Spelter Works of Avonmouth, near Bristol which were erected for war purposes, but were never actually utilised, have been acquired by Baldwin's (Ltd.), who, it is understood, will import Australian concentrates for conversion into spelter at the Avonmouth works, where arrangements will also be made for distillation. Material that cannot be heated there will be sent on, after washing, to Swansea.

A Giant Water Pipe.

The new main water drain from Clapham to the Thames at Nine Elms will be large enough to take a tube train. It is intended to carry away surface water which, by flooding the river Effra, has been a constant source of trouble. The tender of the Unit Construction Co., Ltd., at £210,968 has been provisionally accepted.

Aerodrome Scrap.

Girders and aluminium scrap from the aerodrome at Howden, near Selby, which have been closed down, are being shipped to Germany for the manufacture of tin pans and thermos flasks.

Works Re-Starting.

The prospects are good that, despite fuel difficulties, the Thornaby Ironworks of Wm. Whitwell & Co., Ltd., which have remained idle for about two years, will be re-opened shortly.

Continental Contracts.

The Yarmouth Town Council, after having accepted the tender of the Equipment and Engineering Co., Ltd., has transferred to the Cargo Fleet Iron Co. the contract for 575 tons of tramway rails and a quantity of fish-plates, the Equipment and Engineering Co. having intimated that, owing to conditions prevailing abroad, it was unable to guarantee delivery.

Cost of Living.

At March 1st the average level of retail prices of all commodities taken into account in the statistics prepared by the Ministry of Labour was approximately 76 per cent. above that of July, 1914. The corresponding figure for February 1st was 77 per cent., and that for March 1st, 1922, was 86 per cent. The highest point reached was 176 per cent. above the pre-war level, in November 1920 and the present figure is the lowest recorded since May, 1917.

Wage Reductions.

Among the principal groups of workpeople affected by the reductions in February were iron-puddlers and iron and steel millmen in the Midlands, and steel smelters in most districts, who sustained a decrease of 2½ per cent. on standard rates in each case, equivalent to from 1¼ to 2 per cent. on current rates. On the other hand, iron ore miners in Cumberland received an increase of 3d. per shift.

Unemployment in Britain.

The number of persons, on March 5th, recorded on the register of the Employment Exchange in Great Britain as wholly unemployed, was 1,319,000. This was 9,054 fewer than in the preceding week, and 166,878 fewer than at the beginning of January, 1923.

Quotations.—Pig Iron, Cleveland.

Foundry No. 1, 130s.; No. 3, 127s. 6d.; No. 4, forge, 120s.; hematite, mixed numbers, 125s. Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, bars and angles, £10 to £10 10s.; tees, £11; joists and channels, £10 5s.; sheets, £15 to £15 10s.; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

United States.

Blast furnaces, steel works and rolling mills, including merchant bar iron mills, are working practically at capacity, or close to 90 per cent., and are apparently assured of operation at this rate throughout the first half of this year. There are good prospects that the rate will be maintained over the third quarter. Prices continue to advance steadily. The trade is in a better position as to orders, operation and prices than at any time since 1920.

Import Duties on German Goods.

A notice has been issued by the Customs regarding goods imported from Germany liable to duty. It is stated that in view of the fact that with certain exceptions goods exported from Germany to Great Britain are required to be invoiced in sterling, invoices in marks will no longer be regarded as affording a satisfactory basis for the assessment of value. Declarations of value based on and supported by sterling invoices, will, however, be taken into consideration on their merits as heretofore.

HADFIELDS, Ltd.

Workmen Employed during the War over 1[illegible],000

East Hecla & Hecla Works, Sheffield, England.

WORKS AREA OVER 200 ACRES.

SOLE MAKERS OF

Hadfield's Patent ERA (Trade Mark) Manganese Steel,

THE SUPREME MATERIAL

For the Wearing Parts of Crushing and Grinding Machinery, etc.

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MANUFACTURERS OF Steel Forgings in the rough, rough machined, or finished for Marine and other Engineering purposes of any analysis and to pass any required test.

Steel Castings

of every description up to 30 tons in weight.

Group of Wearing Parts for Stone Breaking and Ore Crushing Machinery

Mining Requisites

of every description, including Steel Wheels and Axles, Haulage Rollers and Frames, Angle Pulleys and Frames, Pedestals, Rope Clips, Shoes and Dies, Balls for Ball and Tube Mills, Grizzley Bars, Crushing Rolls, etc.

Makers of the best kinds of

STONE BREAKING & ORE CRUSHING PLANTS

INCLUDING

GYRATORY JAW AND DISC CRUSHERS.

Head Office for South Africa:

46 & 47, Cullinan Buildings, JOHANNESBURG.

'Phone 5900. Tel. Add.: "HECLA." Box 1009.

STORES DENVER, TRANSVAAL (Adjoining Denver Station).

Rhodesian Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers,
Bulawayo.

Natal Agents:
THOS. BARLOW & SONS (S.A.), LTD.,
Smith Street, Durban.

Pig Iron for Germany.

Exports of pig iron from Britain to Germany during the past year have been as follows:

1922.	Tons.	Average value		
March	2,082	£5	3	2
April	11,667	4	18	10
May	7,660	4	15	6
June	5,305	4	17	4
July	1,701	4	19	8
August	3,440	5	4	3
September	9,045	4	9	9
October	2,280	4	7	10
November	1,100	4	6	7
December	961	4	16	8
1923.				
January	2,460	4	13	11
February	5,580	5	2	7

Second-Hand Machinery.

Business in this section has been dull this week, attributable to the scarcity of second-hand material for requirements on the mines. There are occasional orders from the country and several industrial firms on the Rand for boilers, saw-benches, tanks and a few other requisites for increasing plants. Of late there have been a good many inquiries for the small steel tank, but these have mostly been picked up by the few small mining propositions and others, and have been cut up for the sake of the plate, for which there is always a sale. A considerable amount of new plate has come into the country during the past six months, which is rising in price, so that several of those merchants who managed to get in stock at low figures are now reaping the benefit of their foresight. But there is no doubt whatever that mining companies will always purchase second-hand plate when obtainable. Dealers are, therefore, looking forward anxiously to the next mine selling off material. There are still inquiries for all kinds of spares, and dealers have now to communicate with the coast or outside places, which they have hitherto left alone, on account of the railage and time taken in inspecting and getting material into town. It is much preferred by dealers to have these deals on the spot, as they are easily disposed of by the numerous inquiries on the mines.

Second-Hand Iron and Timber Yards.

These state that business is much about the same as last week, with, if anything, a slight stiffening in prices. Iron is fetching about 7d. and timber 8d.

Timber and Building Materials.

Business in the timber trade has been quite fair during the past week. Stocks are good. Building operations are active, with no outstanding features. Prices of bricks and building materials are unaltered.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10¼d.; beaver boards, 3½d.; floorings, 6d. to 6¼d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d; corrugated iron, 8¾d. to 9d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft. 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12in., 6s.; 15in, 7s. 6d.; 18in., 9s.; dry red oxide, 14s. per 100lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

May 1.—Consolidated Langlaagte Mines, Ltd. (s), 11.30 a.m.
Langlaagte Estate and Gold Mining Co., Ltd. (s), 12.15 p.m.
May 8.—Knight Central, Ltd. (a), 2.30 p.m.; (s), immediately after.
May 15.—Modder B (a), 11 a.m.
E.R.P. Mines (a), 12 noon.
May 15—Modderfontein Deep Levels, Ltd. (a), 11 a.m.; Geduld Proprietary Mines, Ltd. (a), 12 noon.
May 17.—Rose Deep (a), 10.30 a.m.
Village Deep (a), 11.30 a.m.
Geldenhuis Deep (a), 2.30 p.m.
May 17.—Transvaal Consolidated Land and Exploration Co., Ltd. (a), 12.15 p.m.
May 17.—Union Corporation, Ltd. (a), 11 a.m.
May 21.—Meyer and Charlton (a), 11 a.m.
New Goch Gold Mines (a), 12 noon.
Roodepoort United Main Reef (a), 3 p.m.
West Rand Consolidated (a), 4 p.m.
May 22.—Cinderella Consolidated (a), 11 a.m.
Aurora West (a), 12 noon.
Rand Collieries (a), 3 p.m.
New Steyn Estate (a), 3.30 p.m.
Sacke Estates (a), 4 p.m.
May 22.—City Deep (a), 11 a.m.
Robinson G.M. (a), 12 noon.
May 25.—Crown Mines (a), 10.30 a.m.
Durban Roodepoort Deep (a), 12 noon.
Rand Mines (a), 2.30 p.m.
May 25.—New Kleinfontein Co., Ltd. (a), 11 a.m.
May 25—Apex Mines. Ltd. (a), 10.30 a.m.
May 28.—Consolidated Langlaagte Mines, Ltd. (s), 11.30 a.m.
Langlaagte Estate and Gold Mining Co. Ltd (s), 12.15 p.m.
May 28.—Consolidated Langlaagte Mines, Ltd. (a), 11.15 a.m.
Langlaagte Estate and G.M. Co., Ltd. (a), 12 noon.
Randfontein Central G.M. Co., Ltd. (a), 3 p.m.
Randfontein Estates G.M. Co. (Wit.), Ltd. (a). 3.30 p.m.
May 29.—New Primrose G.M. Co., Ltd. (a), 11.30 a.m.
New Unified Main Reef G.M. Co., Ltd. (a), 11.45 a.m
Witwatersrand G.M. Co., Ltd. (a), 12 noon
New State Areas, Ltd. (a), 2.40 p.m.
Van Ryn Deep, Ltd. (a), 3 p.m.
Government G.M. Areas (M.) Cons., Ltd. (a), 3.45 p.m.
May 29.—Monteleo Diamond, Ltd. (a), 4.15 p.m.
May 30.—Knight Central, Ltd. (s), 11 a.m.
May 30—Witwatersrand Deep, Ltd. (a), 2.30 p.m.
June 5.—Brakpan Mines, Ltd. (s).
Leeuwpoort (African Farms) Tin Mines, Ltd. (a), 10 a.m.
June 5.—Welgedacht Exploration Co., Ltd. (a), 11 a.m.
June 6.—S.A. Townships Mining and Finance Corporation, Ltd. (a), 10.30 a.m.
June 8.—West Springs (a), 11 a.m.
Daggafontein Mines (a), 11.30 a.m.
Springs Mines (a), 12 noon.
Brakpan Mines (a), 2.30 p.m.
Rand Selection Corporation (a), 3.15 p.m.
New Era Consolidated (a), 3.45 p.m.
June 9.—Transvaal Coal Corporation (a), 10.30 a.m.
Anglo American Corporation (a), 11 a.m.
July 19.—Transvaal Consolidated Lands (s), 12 noon.
August 10.—Transvaal Consolidated Lands (a), 12 noon.

DURBAN ROODEPOORT DEEP, LTD.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS OF EXTRAORDINARY GENERAL MEETING.

NOTICE IS HEREBY GIVEN that an Extraordinary General Meeting of Shareholders in the DURBAN ROODEPOORT DEEP LIMITED will be held in the Board Room, Second Floor, The Corner House, Johannesburg, **on the 29th day of June, 1923,** at 10 o'clock in the forenoon, for the purpose of considering and, if thought fit, of authorising the Directors to borrow a sum not exceeding £100,000 (One Hundred Thousand Pounds) Sterling, and to secure the sum so borrowed by an issue of First Mortgage Registered Debentures upon the whole or any portion of the property of the Company.

The salient features of the conditions governing this issue are summarised as follows:—

1. Debentures to the amount of £100,000 will be issued at par and will be registered in the names of the holders and will be transferable by means of ordinary transfer deeds.
2. Interest at the rate of 6 per cent. per annum will accrue from the 1st July, 1923, and will become due for payment half-yearly on the 31st of December and 30th of June in each year.
3. The Debentures will be offered for subscription to shareholders. No limit will be placed on the amount of Debentures for which any shareholder may apply, but each shareholder will, on application, be entitled to an allotment of at least £1 value of Debentures for every five shares held, subject to the terms of Clause 4. Any allotment in excess of this pro rata will be made at the absolute discretion of the Board of Directors.

   The Central Mining and Investment Corporation, Limited, and the Rand Mines, Limited, have undertaken to take up such of the Debentures as may not be applied for by shareholders for a commission on the whole issue of 3 per cent.
4. Debentures will be issued in denominations of £1, £5, £10, and £100 each. No application for a less amount than £5 will be entertained, and the total amount of Debentures applied for on each application form must be for an amount which can be made up of the aforementioned **denominations.**
5. There will be no redemption of Debentures for the first three years reckoned from the 1st day of July, 1923. During that period the Debenture Holders will have the right to convert their Debentures into shares of the Company of the nominal value of £1 each on the due date for the payment of interest, provided that the De**bentures are lodged for surrender at the office of** the Company fourteen (14) days prior to such date. Such conversion will be at the rate of one share of the Company for each £1 nominal value of Debentures, and the shares in exchange will only be issued for a number equivalent to the total amount of the Debentures surrendered. Interest in respect of Debentures so converted will cease on conversion, and the shares issued shall be ex dividends declared before the date of such issue.

   After 30th of June, 1926, the right of conversion shall cease, and the Debentures which remain unconverted will be redeemed at par by five equal annual drawings and will be repaid together with any interest which may have accrued **thereon.**

   The Company will have the right at any time to purchase in the open market or otherwise all or any of the Debentures at or below par plus accrued interest. All debentures so purchased will be cancelled, and may at the option of the Company, be set off against its obligation to redeem by annual drawings.

Should the scheme be approved, the Meeting will be asked to pass Resolutions empowering the Directors to give effect to it, and in particular authorising them to pass and register the necessary Bond securing the Debentures when issued. The Meeting will also be asked to pass a Resolution empowering the Directors in pursuance of Article 48 of the Company's Articles of Association, and in addition to the powers thereby specially conferred upon them, from time to time to increase the capital of the Company without further reference to Shareholders by a sum not exceeding £100,000 (One Hundred Thousand Pounds) Sterling by the creation of not more than 100,000 (One Hundred Thousand) new shares of the nominal value of £1 (One Pound) Sterling each, for the purpose of meeting and satisfying any conversion of Debentures issued in terms of the above scheme into shares of the Company, and to issue such shares from time to time as and when required for the period during which such conversion rights subsist.

The Share Transfer Books of the Company will be closed for the purpose of this meeting from the 23rd day of June, 1923, to the 29th day of June, 1923, both days inclusive, and will be re-opened for ten days thereafter so that transfers of shares may be registered to entitle the transferees to apply for this issue. The Share Transfer Books of the Company will then be closed from the 10th to the 16th of July, 1923 (all days inclusive), during which period forms for application and letters of renunciation will be posted to registered shareholders.

By Order of the Board of Directors,

RAND MINES, LTD., Secretaries,
per S. C. STEIL.

Head Office: The Corner House,
Johannesburg, 27th April, 1923.

The Wolhuter Gold Mines, Limited

(Incorporated in the Transvaal.)

DECLARATION OF DIVIDEND No. 29

A DIVIDEND of two and one-half per cent. (2½ per cent.), i.e., Sixpence (6d.), per £1 Share, has been declared by the Board for the period ending 30th April, 1923, payable to Shareholders registered in the Books of the Company at the close of business on the 30th April, 1923, and to holders of Coupon No. 29 attached to Share Warrants.

The Transfer Books will be closed from the 1st to the 7th May, 1923, both days inclusive.

The Warrants in payment of this dividend will be despatched to Shareholders on or about the 4th June, 1923. Those despatched from the London Office to persons resident in the United Kingdom will be subject to a deduction on account of English Income Tax.

Coupon No. 29 attached to share warrants must be presented on or after the 4th June, 1923, at the London Office of the Company, and unless accompanied by Inland Revenue Declarations will be subject to a deduction on account of English Income Tax. Coupons must be deposited FOUR CLEAR DAYS before being **paid.**

By Order of the Board,

RAND MINES, LIMITED,
Secretaries,
Per S. C. STEIL.

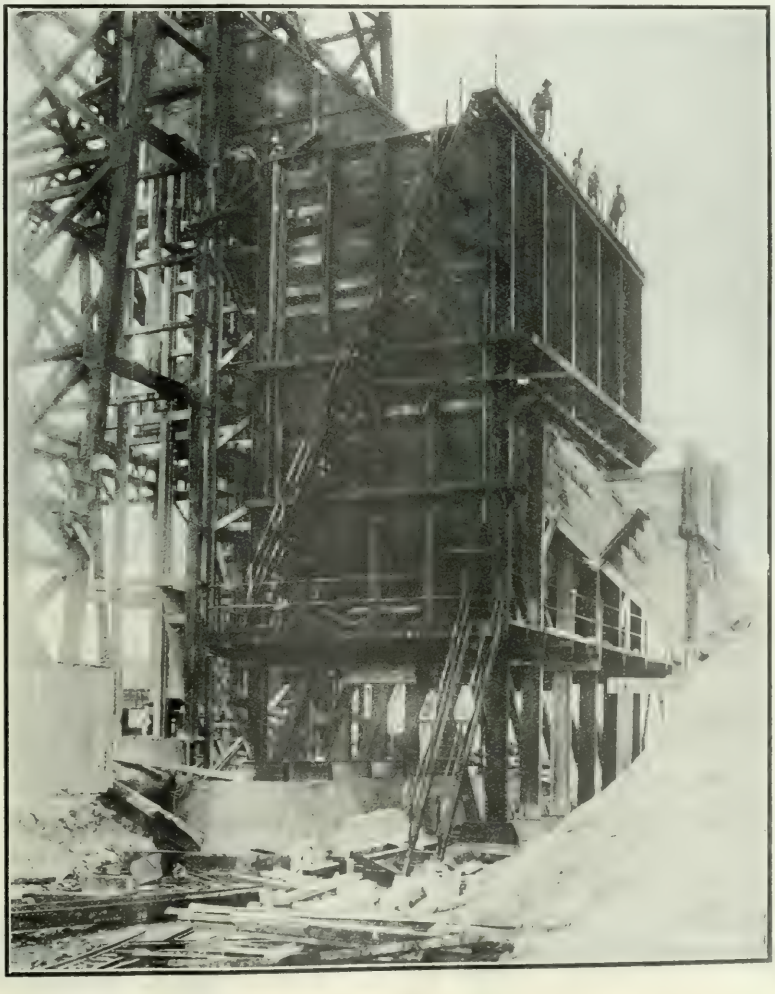
Head Office: The Corner House,
Johannesburg,
26th April, 1923.

The Government Leases—Significance of Quarterly Reports—
News from the Outside Districts.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

VOL. XXXIV., PART I. JOHANNESBURG, TRANSVAAL, SATURDAY, MAY 5, 1923 No. 1649

One of the Shafts at New State Areas where Productive Operations have just commenced.

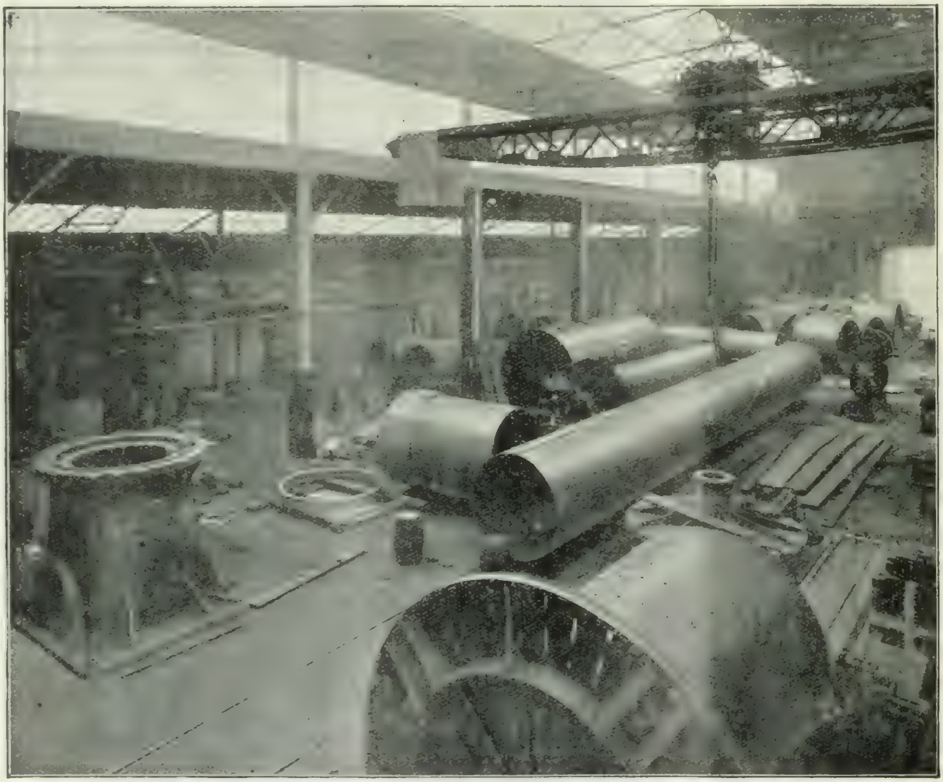


New Ore Bins at the North Shaft, New State Areas. Crushing has just commenced at this mine, which is the latest of the Government Areas to commence productive operations. An important article on the subject of the Government Lease Areas and what they mean to the country appears in this issue.

Edgar Allen

'Stag' Tube Mills

and Crushing and Grinding Machinery of Every Description



View of Work in Progress.

Edgar Allen & Co., Limited,

Imperial Steel Works,
Sheffield

Head Office in South Africa:

Edgar Allen & Co. (South Africa), Ltd.,
3 & 4, New Club Buildings, P.O. Box 551,
Johannesburg.

Agents for Natal:

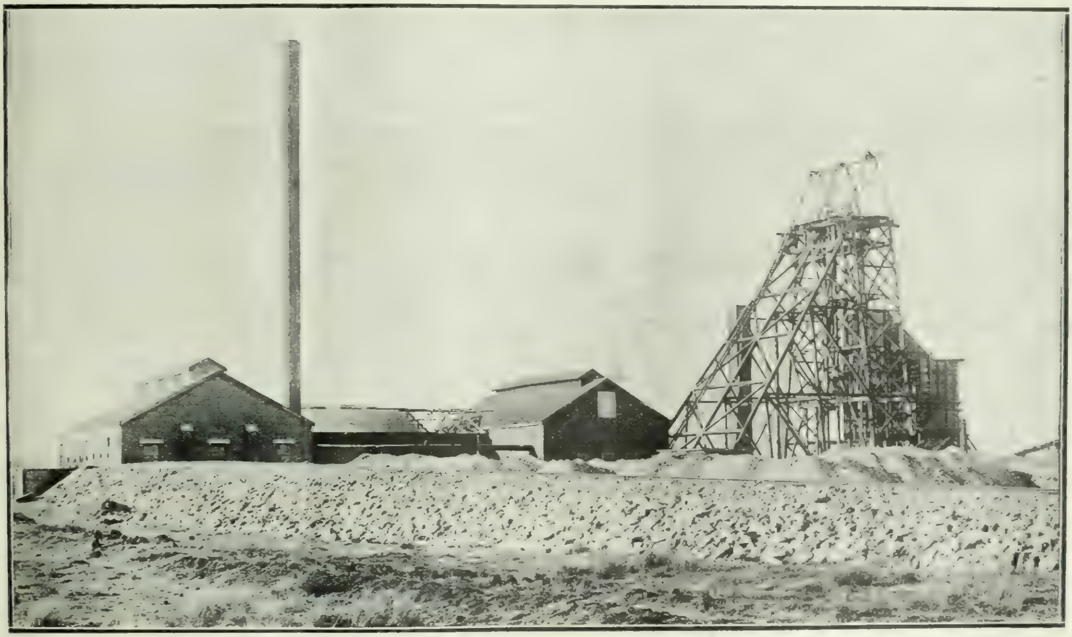
Ingersoll-Rand Co. (South Africa), Ltd.,
349, Smith Street, P.O. Box 811,
Durban.

Concerning Geduld East.

AND THE GOVERNMENT LEASEHOLD AREAS GENERALLY—WHY NO TENDERS HAVE BEEN FORTHCOMING—THE NATIONALIST-LABOUR THREAT TO CAPITAL—LOSS OF A PRELIMINARY OUTLAY OF £1.850.000—GOVERNMENT'S INABILITY TO OPEN UP THE MINE—WHAT LEASE AREAS HAVE MEANT TO SOUTH AFRICA—SOME STUPENDOUS FIGURES.

The announcement made by the Minister for Mines in the House the other day to the effect that no tenders for the leasing of the Geduld East area had been received by the Government, and which we commented on briefly in our issue of last week, will hardly come as a surprise to any thinking man who has seen the burden of taxation —Union, Provincial and Phthisis, etc.—piling up against the mines, and who has read and marked the hostility and venom displayed by Nationalists and Labourites towards the principal industry of the country in various debates in the House of Assembly. Threats of further taxation by the Nationalist-Labour "Unholy Alliance" have clearly resulted in deterring any person or persons who can command the large sum of £1,850,000 (which is the amount estimated by the Government Department of Mines to be required for the development and equipment of this proposition) from sinking this amount of money into an unproven area with the prospect of further onerous taxation being put upon any company which expended this money by an "unproven" and vindictive Government.

THE LATEST LEASE AREA TO COMMENCE PRODUCTION ON THE RAND.



New State's North Shaft and Boiler House.

Frightening Away Capital.

All the claptrap that is talked by pseudo-politicians of the whiskers and red rosette type about "taking it out of Mr Hoggenheimer," as Dr. Reitz expressed it the other day, may be very amusing to the backveld and very edifying to the "anti-Capitalist-Communist-Syndicalist Socialist" audience; but what after all is the result of such vindictive diatribe?

It simply comes to this, that the people who may have had in contemplation the provision of the money for the area in question have come to the conclusion that the proposition is not sufficiently attractive, and South Africa, the country which politicians rave about as "our" country containing "our own" mineral deposits to be developed by "our" own people to "our" own advantage, goes short of nearly two millions of money during the development and equipment stage, to say nothing about the huge sums which would find their way into the Union Treasury and which would be circulated in the country in the form of working expenditure and dividends in the event of the company becoming a successful producer.

£1,850,000 Lost to South Africa.

It may be recalled that this is the second time that tenders have been invited for this lease, and it may be as well to point out that the area consists of 2,640 claims on the farm Geduld No. 21, Eastern Witwatersrand. The claims adjoin the Geduld Proprietary Mines, and it is estimated by the Government that, in order to sink shafts, carry out development and equip the property with machinery and buildings, etc., a sum of no less than £1,850,000 will be required before a single ounce of gold is won. Obviously, then, this is an undertaking for the much-despised capitalist, or rather, for a group of capitalists.

It is these much vilified persons who are to be asked to put their hands in their pockets to the tune of £1,850,000 of money in order to exploit an ore body lying at an average depth of two-thirds of a mile from the surface, and who will, furthermore, be required to state what percentage of those profits they will be prepared to give to the State the first five years from it and when they begin to reap a financial reward.

Over and above the provision of the large capital sum above mentioned and the guaranteeing of a substantial proportion of any profits secured to the Government, the Geduld East flotation would, if and when it commenced to earn money, be called upon to pay profits tax. The Company would also have to submit to heavy taxation in respect of phthisis, and unless the Transvaal can, during the next few years, rid itself of a predatory Provincial Council, it would have to submit to some such stupid imposition as that inflicted on the industry of the country by the Employers' Tax or the suggested overseas dividend tax.

Nobody, however, is going to put up the large sums of money necessary to bring this and other lease mines to the productive stage, or to enable them to consummate their programmes, unless there is a sufficiently attractive prospect of eventual reward. There must be a more or less sure guarantee that working costs will be maintained at a low level, which means that wages must be kept within a sane, economic limit, that there must be rendered by labour a reasonable measure of efficiency, that an adequate supply of cheap coloured labour shall be available, that railway rates on coal and stores and supplies shall not be enormous, and that there shall be freedom from vexatious taxation and from political interference and restraint.

These remarks apply equally forcefully to all mines, no matter whether they happen to have been acquired under the mere ordinary mining title and from private owners, or whether they are leased from the Government on a basis of "You put a million or two and we will share your profits with you."

State Mining: An Impracticable Suggestion.

The failure of the Government to elicit any response to its invitation for tenders for Geduld East has, naturally, aroused considerable interest, particularly on the Far East Rand, and in an article on the subject, our contemporary, *The Springs Advertiser*, remarks: "Though nothing definite has been published anent the tenders for the leasing of the Geduld East areas, a crop of rumours is going the round. The most persistent rumour is that the share of profits claimed by the Goverment is considered extortionate, and that a ring has been formed by the groups not to tender. Whether that is true or not we cannot say; in dealing with mining matters the Government is usually secretive, and, without questioning the motives of responsible Ministers, it is felt that in such a matter as receiving and dealing with tenders for the leasing of a State asset the concealment of particulars is not warranted. . . . The leasing of new areas is of vital importance, not only to this district, which is primarily concerned, but to the whole of South Africa, and if the Government is not going to lay itself open to the charge of graft, then it should take the public into a measure of its confidence and publish the text of the proposals made by the tenderers. The public has a right to know, and know, too, before tenders are cooked. If, on the other hand, the rumour that the groups have conspired not to tender is correct, then the Government should announce the fact and waste no time in taking the alternative to exploit these rich areas as a State mine and for the benefit of the nation. We are not enamoured with the idea of State mining, especially with the composition of the present Government; but if the financial groups elect to stand aloof and ignore an offer to tender, then the State should seriously consider its obligation to exploit the resources of the country to provide work for its thousands of unemployed and ensure revenue for the exchequer. This is the second offer to the financiers to tender for the lease, and it is discreditable for the Government to have the matter still hang fire."

"If," says the paper in conclusion, "the big financiers find that they can more lucratively invest their money in America or Angola than in Rand mining, there is none to say them nay; but the Government is, like the heathen, without excuse if it does not take steps to undertake profitable work, and, when the groups refuse to lease, exploit the rich deposits. Of course, rumour is often a lying jade, and possibly the tenders are in. If only one tender has been received and the terms are not as favourable as might be expected, in view of the sorry state of the country the Government should accept the offer and see the work proceed immediately. The urgent alternative is to State mine the Geduld East."

It is all very well for the organ of public opinion in Springs to talk about the Government working this Geduld East area on its own account. If the reef lay at outcrop and showed visible gold no doubt the Government would work the enterprise on behalf of the State. But inasmuch as an expenditure of nearly two millions sterling will be required for this mine before a single ounce of gold is won, and inasmuch as a million of money or more will have to be spent before any opinion can be expressed as to whether the reef values and widths would justify the erection of a productive plant, it is very clear that the Government, in its present impoverished financial state, cannot possibly undertake such an enterprise and would, probably, come in for severe criticism, even if it were able to raise the money necessary and decided to embark on such a speculative enterprise.

The "Capitalist" and his Money.

No, it is the much-reviled "Capitalist" who must adventure this sum. If no satisfactory reef disclosures are made, well, then, the money has been lost and the capitalist, and the capitalist only, will be left to nurse the baby. The various vultures will no doubt bewail the fact that there is no carcase to be picked, but the fact that the capitalist and the shareholder have been the only people to lose their money will be a matter for universal rejoicing. But should a profitable mine be opened up the Government will then proceed to help itself liberally to profits and in addition impose various forms of taxation, whilst politicians will squabble over the spoils and make a party question out of the proposition.

Can one wonder that capital is fighting shy of the Geduld East? No. But one is certainly entitled to wonder if the importance of making conditions for the working of Government lease areas sufficiently attractive to capital is generally realised.

How Leases Have Benefited South Africa.

Our Nationalist critics solemnly inform us that the mines impoverish the country, merely taking wealth out of it. If they really and honestly believe in this absurd view, they will no doubt exult in the fact that nearly two millions sterling is not going to be spent in South Africa on the preliminary development and equipment of an area which might within the next five years become one of the industrial pillars of the State.

What has been the history of the first of the big Government Lease mines—the Modderfontein Government Areas? To what extent has this mine "impoverished" South Africa? The facts regarding this mine are very briefly as follows.

After giving somewhat disappointing results in the first instance, the property has become one of the leading gold mines of the world. It is affording direct employment to between seven and eight hundred whites. Since its inception it has spent on capital account and working costs between 12 and 13 millions sterling. It has enriched the coffers of the State to the tune of about four millions through and by reason of its payments to the Government in terms of the lease and also on account of other direct taxation, and it has already distributed amongst shareholders, a very large number of whom are resident in South Africa, and many of whom do not own more than 100 shares apiece, between three and four million pounds.

In one way and another the Modderfontein Gold Mining Areas has put into circulation during the last few years a sum of money amounting to approximately 19 millions sterling! And this is what Nationalists and people with political axes to grind call taking wealth out of the country!

New State Areas Commences Production.

The second of the all lease areas—New States—commenced crushing during the week. The plant has been laid out on a basis of 600,000 tons per annum capacity with provision for extension, and the commencement of producing operations at this mine will put a further large amount of money into circulation on the Far East Rand, and thus throughout the country.

The company was formed nearly five years ago on a leasehold basis—that is to say, the mineral rights were vested in the State and were leased to the company. Under the terms of the agreement, the company will have to pay a considerable portion of the profits earned to the Government. The company already has expended a sum of about £1,800,000 on shaft sinking, development and equipment. Approximately a million sterling was expended on shaft-sinking and shaft equipment, etc., before the management was able to ascertain whether the company would be justified in erecting a productive plant.

Some Stupendous Totals.

In addition to these mines, there are several other portions of claim holdings which are worked by mines—Brakpan, Springs and Modder East, for example—on a lease basis. The Government's share of profits from all these lease mines in the past few years has been as follows:—

1916-17	£5,112
1917-18	238,062
1918-19	478,139
1919-20	630,353
1920-21	900,490
1921-22	894,063

The above figures represent share of profits, etc., less proceeds of Bewaarplaatsen.

These amounts in themselves constitute a vast sum of money. But over and above them must be considered the amounts paid out in Government and Provincial taxation, in respect of working and capital expenditure, on phthisis, and in dividends. The total aggregate of all these amounts would certainly amount to a stupendous sum, and it must, or should, be a matter for universal regret that the attractions of the Geduld East area are not so great that people who can command two millions sterling consider them sufficienly alluring to neutralise taxation prospects and the uncertainty of future Government action.

Quarterly Reports.

ANGLO-AMERICAN CORPORATION OF SOUTH AFRICA, LTD.

Brakpan Mines.

Crushed, 180,100 tons; total working revenue, £319,959 2s. 2d., or 35s. 6·38d. per ton milled; total working costs, £203,299 12s. 8d., or 22s. 6·92d. per ton milled; working profit for quarter, £116,659 9s. 6d., or 12s. 11·46d. per ton milled; add estimated premium on gold, £4,059 17s.; total working profit for quarter, £120,719 6s. 6d. No allowance has been made in the foregoing figures for taxation or the percentage of profits payable in connection with the acquisition of the lease area and Schapenrust claims. The expenditure on capital account amounted to £21,551 16s. 11d. Owing to a breakdown of the winding engine at No. 2 shaft, the tonnage crushed was affected by approximately 10,000 tons. If the breakdown had not occurred, the tonnage crushed for the quarter ended 31st December, 1922, namely, 186,200, would have been exceeded during the quarter ended 31st March, 1923. The development footage for the quarter totalled 6,251 feet, and gave the following results: Sampled, 3,965 feet, averaging 9·37 dwts. over 17·46 inches; payable, 2,280 feet, averaging 11·38 dwts. over 17·2 inches.

Springs Mines.

Crushed, 151,200 tons; total working revenue, £299,314 13s., or 39s. 7·10d. per ton milled; total working costs, £170,651 3s. 7d., or 22s. 6·87d. per ton milled; working profit for quarter, £128,663 9s. 5d., or 17s. 0·23d. per ton milled; add estimated premium on gold, £2,539 19s. 9d.; total working profit for quarter, £131,203 9s. 2d. No allowance has been made in the foregoing figures for taxation or the percentage of profits payable in connection with the acquisition of the lease area. The expenditure on capital account amounted to £10,963 17s. 1d. The tonnage crushed is an improvement of 7,600 as compared with the quarter ended 31st December, 1922. The development footage for the quarter totalled 5,211 feet, and gave the following results: Sampled, 3,340 feet, averaging 20·61 dwts. over 16·33 inches; payable, 1,595 feet, averaging 32·82 dwts. over 18·15 inches.

West Springs.

The expenditure for the quarter amounted to £61,365 15s. 5d. A call of 1s. per share on the partly paid shares in the company was made on the 8th January, 1923, making the shares 19s. paid up, and payments in advance of calls were made in respect of 169,983 shares, making them fully paid. The debenture issue mentioned in the circular to shareholders dated the 26th March, 1923, was fully subscribed. The development footage for the quarter totalled 4,544 feet, and gave the following results: Sampled, 3,445 feet, averaging 9·34 dwts. over 35·98 inches; payable, 1,305 feet, averaging 13·88 dwts. over 48·39 inches.

Electrical Goods.

Business in this section has been dull during the past week. The head of a leading electrical importing firm this week said people wanted things cheap nowadays, and the merchant had perforce to buy in the cheapest market. This market, Germany, had up to recently supplied what was wanted, more or less with satisfactory results as to quality and price; but, he stated, within the past three or four months Germany seems to have gone to pieces absolutely. He instanced one particular line, timber switches, which in the past had been fairly satisfactory, but had now become absolutely worthless, and proved that the German market is finished, as far as Johannesburg is concerned with it. The market, he said, is such a poor one, and the demand for cheap articles so great that one naturally turns to the Continent, and one gets taken down, as the quality of commodities recently received were very poor. It is, he thought, a great pity that the retailer who buys this rubbish should not be the person who is let down, but the merchants. The whole tone of the electrical accessories market here is rather depressing on that account.

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The Value of Gold.

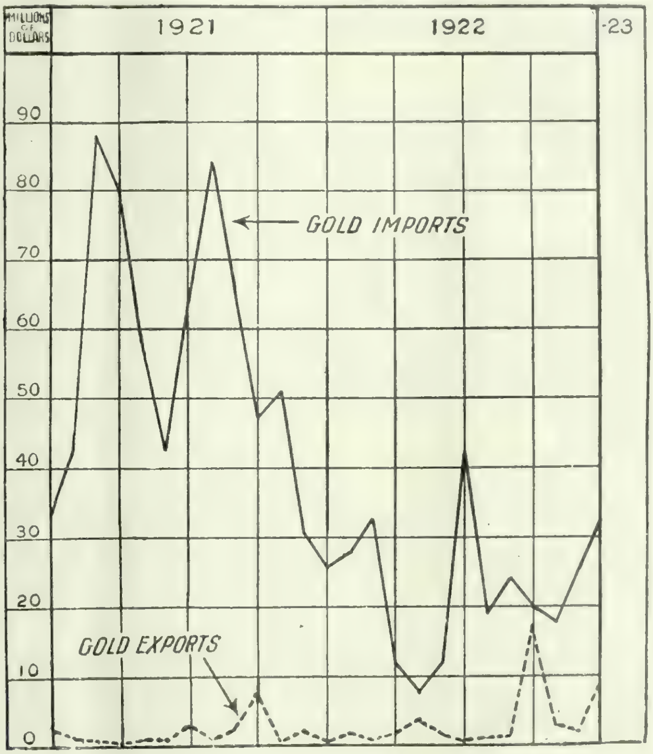
WHY IT IS FALLING—CHAMBER OF MINES STATEMENT.

Mr. W. Gemmill, Actuary and Labour Adviser to the Chamber of Mines, has sent the following letter to the Chairman of the Public Accounts Committee, House of Assembly:—

"The Gold Producers' Committee understands that Mr. F. W. Hirst has been requested to give evidence before the Public Accounts Committee, which is handling the new Currency Act Amendment Bill.

"Mr. Hirst's evidence, if taken, will no doubt bring to the notice of the Committee some very important opinions in regard to the value of gold in the near future.

UNITED STATES IMPORTS AND EXPORTS OF GOLD



The first is, that the British Governmnet, influenced by a desire to reduce the burden of the annual debt charge for the American debt (which is a gold debt) will endeavour to depreciate the value of gold as measured in British currency. The level of prices in the United Kingdom would be stabilised at about the present level by suitable small expansion or contraction of the currency, while on the other hand the American currency, aided by the annual payment of £30,000,000 in gold by Great Britain to America, would continue its present downward tendency until the dollar would be at a discount as compared with the Bradbury. Gold, whose value is measured by the American dollar, would correspondingly depreciate as compared with the Bradbury, with the result that, instead of the present small premium on gold in terms of Bradburys, there would even be a discount.

Inflating British Currency.

"The second view is that as soon as the American dollar is on a par with the Bradbury, the British Government will take advantage of any further depreciation in the value of the dollar to inflate the British currency, thus maintaining the Bradbury on a par with the dollar although at the same time increasing the prices of commodities in the United Kingdom.

"In either of these events, gold would be depreciated in terms of commodities, with serious consequences to the gold mines; and the Gold Producers' Committee feels it would be wanting in its duty as representing the gold mining industry if it did not direct the attention of Parliament to these important aspects of the currency question as affecting one of the country's most important industries. Dangers of this description to the gold mining industry will continue to arise until the United Kingdom has returned to a gold basis; indeed, the sooner the world generally returns to a gold basis the better from the point of view of gold mining.

A "Bankrupt" State.

"The United States of America is the only important country on a gold basis at the present time, and it is clear that if she had adopted an inconvertible paper currency, gold might cease to be in demand either as currency or as backing for currency, a position which would be fatal to the gold mines, and therefore to South Africa, taken with the [illegible] outlook of the gold mining industry would be a [illegible] step.

"I am instructed to make it clear that this letter is not submitted with a view to opposing the present Currency Act Amendment Bill, for which there are doubtless sound good reasons; but once in connection with that Bill it is felt that certain assurances are desirable in regard to the action of the banks. Thus there is no certainty that, even with the facilities given under the Bill for the transfer of balances from London to the Union, the banks would bring their rate of exchange on gold transfers to a reasonable figure.

Open the Mint.

"It is of the utmost importance from the gold mining point of view that nothing should be allowed to stand in the way of the immediate opening of the mint for the coinage of gold. Both in regard to the rate of exchange and the possibility of the depreciation of gold in terms of the Bradbury mentioned at the beginning of this letter, the ability to convert gold bullion into coin at the mint affords a great, although not complete, safeguard.

Return to Gold Currency.

"As regards the return of South Africa to a gold currency, it is submitted that should gold for a period of, say, two or three months return to par (after allowing for exchange, etc.), then South Africa should ipso facto return to a gold currency, and thus do something towards leading the way to that return to a world gold currency which is so much in its own interests.

> "Finally, the Gold Producers' Committee respectfully suggests that it would be fitting for the Union Government to represent to the Imperial Government the dangers from the point of view of the gold mining industry, and therefore of South Africa and of the capital invested in South Africa, of the continued use of inconvertible paper currency by the United Kingdom, and the corresponding advantage to those interests of a return to a gold basis by Great Britain at the earliest practicable date."

In a recent issue of *The Rand Daily Mail* Dr. A. J. Bruwer wrote:—

Gold has a standard price—85s. per fine ounce, or £3 17s. 10½d. per standard ounce—but it has no standard value.

The value of gold is its purchasing power over commodities; the price of gold is the quantity of money for which a unit of gold bullion will exchange.

The fixed price of gold seems misleading about the value of gold. Why the price of gold rose above 85s. per fine ounce was because the notes in terms of which the price was expressed had become so plentiful in relation to gold that their values had become depreciated in comparison with gold; or, in other words, gold appreciated in value in terms of paper money on account of the great scarcity of gold and the great abundance of paper money.

The "premium" on gold measured the depreciation of the paper pound. Such a calculation, is based on the relative abundance of the credit instruments (or paper money) in comparison with gold, and the trust or distrust of the public in a possible return to gold parity; this gives us an expression of the relation between gold and paper, but not between gold and goods.

Two Mining Essentials.

This standard price of gold distinguishes this industry from any other industry. When the costs of production increase in the gold industry the mine owners cannot recoup themselves by raising the price of their commodity; their profits will decline, that is all. Consequently, to the gold mining industry two things are very essential:

(a) The costs of production should be kept as low as possible by the effective use of labour and capital; and

(b) In order to keep the costs of production from fluctuating, the mine owners want fixity of purchasing power as the first quality which money should possess. This fixity of purchasing power is possessed to a remarkable extent by gold coin, and, as a consequence, by a currency convertible into gold.

The annual supply of gold does not disturb its value greatly; it is the existing stock of gold that affects prices. As gold passes into the [illegible] of the world, its value as a monetary unit is not appreciably affected. The use of gold for industrial purposes has a stabilising effect on the value of the gold coin. From the estimates of the Director of the United States of America Mint it appears that from one-quarter to one-third of the world's annual production of gold finds its way into industrial uses with the effect above noted. Gold will always be distributed between its industrial and monetary uses in such a way as to equalise the exchange rates of gold and other things for the two uses, *i.e.*, when an increase in the amount of money results in increased prices (or in a decreased purchasing value of gold), then a relatively larger amount of gold annually brought to the mints will tend to flow into industrial uses. This will limit the increase in the amount of money and the consequent rise in prices.

If Gold Gets Cheaper.

If now the purchasing power of the gold coin falls, that means that several things might happen:

(a) We have "marginal" mines, *i.e.*, mines which it just pays to operate. These will have to be shut down on account of the increasing costs of operation.

(b) We have, moreover, "margins" in most productive mines, *i.e.*, certain depths beyond which the cost of mining more than eats up the value of the product. (We will not devote labour and capital to the production of an article which will buy less for us than another article which can be produced by the same amount of labour and capital.) If now we decrease the purchasing power of gold over commodities in general, we increase the cost of mining, and this means closing down "marginal" mines and a small "margin" in productive mines.

The gold mine operator does not want price fluctuations much less than the industrialist and the business man want them. If the "premium" on gold did not appear it might have meant severe consequences to our gold mines. If prices rise (due to a decreased purchasing power of gold) that means that the costs of production of gold will run up, and this will decrease the supply of gold. Gold having a standard price, the resulting smaller profits will make mining a less attractive occupation. This fact might have a steadying effect on prices again. Extreme fluctuations in prices are checked by gold flowing into industrial uses, by the closing down of "marginal" mines, and by the gyroscopic action of a legally fixed gold reserve behind credit instruments on prices.

How Gold Values Have Fallen.

From our summary of the trend of prices in Great Britain between 1789 and 1914 we can give the course of the value of the gold commodity money as follows:

(a) Between 1789 and 1809 the exchange value of gold against commodities in general—*i.e.*, as indicated by index numbers of wholesale prices—fell to just about one half of what it was at the beginning of that period.

(b) From 1809-1849 the value of gold ascended to about 2½ times what it was at the commencement of the period.

(c) From 1849 to 1873, with two notable interruptions, gold's value fell to something less than three-quarters of what it was in 1849.

(d) From 1873-1896 the value of gold ascended to about a quarter higher than it was in 1873.

(e) Between 1896 and 1914—when wholesale prices rose in England from 61 to 85—gold depreciated by two-fifths of what it was in 1896.

(f) For the period 1914-1920 we have to make allowance for the fact that England was on an inconvertible paper basis. When the war started, inflation—one of the ways in which any war is financed—followed. The multiplication of credit instruments took place on so large a scale that, firstly, redemption in gold became impossible; and, secondly, prices rose from 85 in 1914 to 251 in 1920—the peak. This does not, however, indicate the depreciation in the value of gold in terms of commodities. Gold was really at a "premium" in terms of these credit instruments. The "premium," however—or the appreciation of gold in terms of paper—did not nearly equal the "premium" on goods, or the rise in prices; while the price of gold did not nearly double, the price of commodities almost trebled.

This indicates a severe depreciation in the value of gold in terms of commodities for the period under consideration. While the price is determined by the amount of money multiplied by the velocity of circulation over the volume of trade, the "premium" on gold in terms of the paper money is determined by the scarcity of gold and the distrust or trust of the public in the paper money. In the case of the price of commodities other than gold we are dealing with business; in the case of the price of gold we are up against a certain amount of psychology, and we are likely to err on the optimistic side when we try to find what our own currency is worth. This accounts for the discrepancy.

I have now shown that there has been a steady lowering of the value of gold going on over a very long period—the period for which we have statistics has been discussed.

I have given the causes for this depreciation, one of which is the undue multiplication of paper currency, be that convertible or inconvertible; the inconvertible paper currency is the worst sinner in this respect because it actually displaces gold.

This is a fact worthy of the consideration of our mine owners.

Second-hand Iron and Timber Yards.

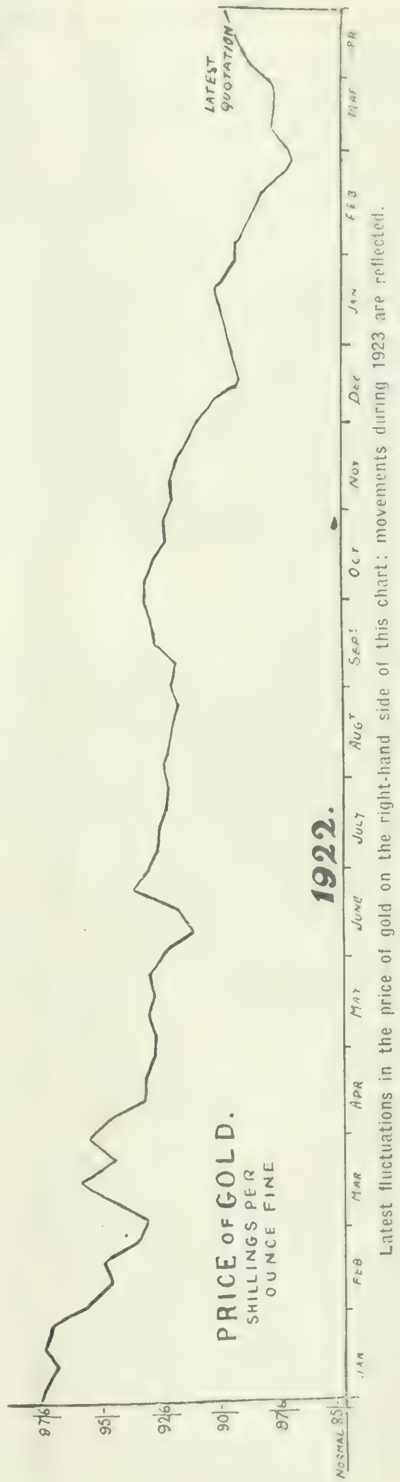
Prices are hardening in second-hand iron and timber in sympathy with new materials, without, however, much business doing. Iron is ruling at 7d. and timber at 8d.

Union Imports and Exports for April.

The following is a statement of imports, exports and gross revenue collections for April, 1923:—

	Imports.	Exports.	Gross Revenue.
Capetown ...	1,043,093	3,325,826	123,907
Port Elizabeth ...	917,252	464,616	93,862
East London	367,615	480,324	45,408
Durban	1,533,298	695,788	138,683
Johannesburg	—	—	71,016
Lourenco Marques ...	440,694	(c)	16,769
General Post Office .	(a)	—	19,120
Other ports and stations	40,348	96,236	17,728
Totals	4,342,300(b)	5,062,790(d)	526,493

(a) Figures not available. (b) Value includes £297,500 imports by South African Government. (c) Figures not available. (d) Value includes £2,978,622 gold exported at Capetown.



Latest fluctuations in the price of gold on the right-hand side of this chart; movements during 1923 are reflected.

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WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

Position and Outlook on the Rand.

THE MARKET'S TONE AND PROSPECTS—POINTS FROM THE LATEST QUARTERLY REPORTS—PROFITS AND DEVELOPMENT COMPARISONS—NEW PLANTS AT WORK ON THE FAR EAST RAND—COSTS AND THE DISAPPEARANCE OF THE PREMIUM—A GENERAL SURVEY.

The [illegible] good week on the local share market appears to have culminated in [illegible] which has now and then been heightened by an occasional hardening of prices. Various reasons have been adduced to account for the failure of the market to secure the optimistic tone which it exhibited at the close of last year and during the opening weeks of 1923. In some quarters the political situation both overseas and in South Africa has been held responsible for a falling off in prices, whilst the fact that the decline in the price of gold to a figure which, when transmission and exchange are taken into account, means the reducing of the premium to nil, has also been represented as playing an important part in the market outlook. The political outlook [illegible] the majority of [illegible] which the Government [illegible] on the Budget debate has generally been held to represent a fairly satisfactory position. As to the political outlook overseas, this has been so complex and fraught with so much peril for such a long time that it seems probable that the nerves of the market have become more or less case-hardened in regard to Europe with all its potential complications.

Tonnages and Profits.

Undoubtedly the real reason for the recent sagging of prices is to be sought in the fact that, generally speaking, the quarterly reports of the mines for the three months ending with March 31st do not make anything like so satisfactory a showing as the previously published quarterly reports did.

To deal first of all with the outstanding features of productive operations, in respect of certain of these mines, it may be pointed out that the profit of the Crown Mines, at £[illegible], practically £78,000 less than it was in the preceding quarter.

The tonnage was 9,000 less and of the total working revenue of £858,424, working costs absorbed £618,276.

Government Areas, another big Rand mine, records a decline of £[illegible] on the quarter's working, whilst at [illegible], although the tonnage of ore crushed was greater by 10,000 tons, the working costs exhibited an increase of 8d. per ton and the revenue a decline of 1s. 2d. per ton, with the result that the working profit was £34,128 lower than it was in the previous three months.

Van Ryn Deep's costs were 6d. per ton higher, the revenue was 2s. 1d. per ton lower, and the profit was nearly £[illegible] less.

Village Deep crushed 172,281 tons, a decrease of over [illegible] tons, and the total profit was £[illegible] against £[illegible].

Nourse Mines crushed [illegible] tons, against [illegible] tons, and the total profit was £16,049, against £[illegible].

Modderfontein East crushed 78,000 tons, against 81,400, and the total profit was £[illegible], against £100,451.

In the Anglo-American group the value of fine gold produced was taken at 88s. in January and 87s. 6d. per ounce in February and March. [illegible] crushed 180,100 tons and secured a total working profit of £120,719 [illegible] 6d. Owing to the breakdown of the winding engine at No. 2 shaft, the tonnage crushed was reduced by approximately 10,000 tons. If the breakdown had not occurred, the tonnage crushed for the quarter ended December 31, 1922, namely, 186,200 would have been exceeded during the quarter ended March 31, 1923.

Springs crushed 151,250 tons, and the total working profit for the quarter was £131,263 [illegible] 2d. The tonnage crushed is an improvement of 7,000 as compared with the quarter ended December 31, 1922.

At the Consolidated Langlaagte mines the revenue was 6d. per ton lower and there was an increase of 8d. per ton in the working costs, with the result that the working profit was £3,675 less than for the preceding three months.

At the Langlaagte Estate there was a decrease of 1,200 tons in the quantity of ore crushed, and an increase of 1s. 2d. per ton in the working costs. There was a decrease of £11,396 in the working profit for the quarter.

The New Primrose's working profit at £6,832 was £2,871 less than for the preceding quarter.

At the Witwatersrand the working profit at £25,088 was £[illegible] less than for the previous quarter.

Why Profits Have Declined.

The decrease in profits is in the main the result of the decline in the gold premium: in fact, one might say the disappearance of the premium coupled with an increase in working expenses, due, no doubt, in some material degree, to the re-institution of the holiday leave privileges. Each of these factors has been fairly generally anticipated in its probable effect on the Witwatersrand mining industry, and the incidence of the two combined, when considered in relation to returns, amply justifies the assertions made by and on behalf of the industry before and during the great strike that a reduction in working costs was absolutely imperative. At the moment of going to press the local market is fairly steady, and although the last quarter's results are in respect of numerous companies disappointing, there are certain encouraging features which are worthy of brief remark. The City Deep, for instance, crushed, so we understand, a record tonnage for the mine last month. The Durban Deep's new outlook is considered to be exceptionally good. At the New Modder the drives in the lowest area of the property are said to be disclosing ore of excellent value, and at Geduld and New State Areas the new plants are in operation. On the other hand, no tenders have been received for the Geduld East area, and this, as we said last week, is probably the outcome of some natural timidity on the part of capitalists as the result of the threat of that unholy alliance, the Nationalist Labour pact.

If the Government of the country and the Province will only leave the Reef alone and allow the industry to work out its own economic salvation, the mines will continue to pay shareholders dividends and at the same time support the general community for a good few years to come, and the greater the measure of economy in the working of the mines the greater will be the measure of the country's general prosperity.

Development Figures Analysed.

The development features as disclosed in certain of these reports are of very considerable interest. Pressure on space this week prevents us from examining this aspect of mining on the Witwatersrand in detail, but in regard to Corner House subsidiaries only it will be of interest to calculate from the very informative development figures published by the Central Mining-Rand Mines Group, in the quarterly reports issued by the group for the three months ended with March 31st, the percentages of payability disclosed, and to contrast these with figures for the preceding quarterly period. Taking a few of the subsidiaries, figures are as under:

	Quarter ended	
	December 31.	March 31.
Nourse Mines	67	56
Ferreira Deep	52·3	43·4
Modder B.	37·5	20·5
Crown Mines	74	79·4
New Modder	76	78
Durban Deep	84	88·2
E.R.P.M.	53	45·8
Modder East	30	9·1
City Deep	73·6	77·6

Robinson Deep.

£248,000 PROFIT LAST YEAR—LARGE INCREASE IN TONNAGE—MR. CHRISTOPHERSON'S REVIEW.

The annual meeting of the Robinson Deep, Ltd., was held on the 27th ultimo at the New Consolidated Gold Fields, Ltd., Simmonds Street, when Mr. D. Christopherson presided.

The Chairman said: Gentlemen, Before moving the adoption of the Report and Accounts for the year ended December 31, 1922, I propose to briefly review the past year's operations and thereafter say a few words on the general position and outlook for the current financial year.

So far as the balance sheet and the revenue and expenditure accounts are concerned, I think you will find them sufficiently clear and full to call for little further comment from me, but there are one or two items therein I will briefly refer to. As you are all aware, since the close of the financial year, the company has issued £250,000 debentures. The proceeds of this issue were used to pay off the remaining portion of the loan of £300,000 which was still outstanding at the end of the year, and the balance has provided funds for further capital expenditure, thus enabling a dividend of 4s. per share to be declared in December last on the "A" shares, which dividend absorbed £100,000. Thus, in next year's balance sheet, the heading of "Loan" will be replaced by debenture issue, which issue is redeemable over eight years by seven equal annual drawings, the first of which will take place at the end of 1924.

On the Credit Side.

The other item in the balance sheet to which attention might be called is on the credit side. You will note that stores and machinery now being carried by the mine is just over £41,000, which compares with £64,500 at the end of 1921. This reduction is due only to some extent to the lower price paid for stores, but more so to a reduction in the quantity of stores carried.

I do not propose to go through the revenue and expenditure account in detail, as, in reviewing the past year's operations and results, I shall to some extent cover that ground.

In the first place, a general comparison of the results for 1922 with those for 1921 is of no value in view of the three months' strike which took place at the commencement of 1922, so the results must be reviewed more or less without that comparison.

The main feature of the results for 1922 is that, in spite of the three months' strike and in spite of the fact that the average price of gold was 93s. 3d. per fine ounce, as compared with 105s. in 1921 and 112s. 1d. in 1920, the profit on working amounted to £248,000, as compared with £179,800 in 1921, £188,600 in 1920, and £152,500 in 1919.

A Record Profit.

In fact, gentlemen, excluding the first period of eighteen months of this company's history, the working profit for 1922 considerably exceeded any former annual profit made, and the reason for this can be summed up in the following extract taken from Mr. Chalkley's report: "The greater discipline and control of workmen with the resulting efficiency and economies in working, accompanied by a slight decrease in the cost of stores, have resulted in an appreciable decrease in working costs which, from 26s. 6d. per ton milled in 1921, were reduced to 21s. 4d. per ton in 1922."

Mr. Turvey, in his report, confirms this and gives figures to show what this improved efficiency has meant and how greatly it has added to the productivity of both the European and native workers.

Improved Efficiency.

This improved efficiency enabled the company to crush on the average 71,800 tons per month during the last six months of the year, as compared with an average monthly tonnage of 57,900 for the previous year, whilst the average monthly working costs for those six months were [illegible] per ton milled.

The grade for the year under review was [illegible] dwts. [illegible] value, but, as the mill and cyanide works were only laid out to deal with 63,000 tons per month, the larger tonnage naturally affected the value of the residues, which rose to ·37 dwts. during the latter half of the year. There is no question that it has paid handsomely to put through the larger tonnage at the cost of higher residue value. The whole of the reduction works are, however, now being put into a position to crush on the most economical basis at the rate of 75,000 tons per month, a matter to which I will refer later.

Lower Working Costs.

Working costs for the year amounted to 21s. 3·988d. per ton milled, as compared with 26s. 6·058d. for 1921, and 29s. 2·118d. for 1920.

The development work for last year has shown satisfactory results. The footage for the year amounted to 11,830 feet, or 6,205 feet less than the previous year, the reduction being due to the strike, and the management not being able thereafter to reach the normal rate of about 1,500 feet per month until August. In spite of this reduced footage, the ore reserve at December 31 last is estimated at 1,846,000 tons (or only 90,000 tons less than at December 31, 1921) of an average value of 6·7 dwts. over a stoping width of 70 inches, equal to 469 inch-dwts., as compared with 442 inch-dwts. in December, 1921, or an increase of 27 inch-dwts. As you will observe from Mr. Chalkley's report, in arriving at the above figures, a pay limit of 5 dwts. has been taken.

The footage sampled during the year amounted to 5,100 feet, of which 4,345 feet, or 85·2 per cent., was in payable reef, indicating an average value of 15·9 dwts. with an average reef width of 35·7 inches.

I will now briefly refer to the current year's operations and the general outlook for the future of the company.

The Future Outlook.

As regards the actual results for the last three months, these have been published, but a few remarks with regard thereto may be of interest. In the first place, as regards working costs these have averaged about [illegible]. This average we hope to reduce, as certain work now going on is completed. For instance, at the present time pumping costs are high, namely, about 10d. per ton. When the central pumping station at the bottom of the [illegible] shaft is in operation, we expect these costs to be markedly reduced. This central pumping station would have been in operation to-day had it not been for the fact that the manufacturers have failed to deliver the motors according to contract time.

However, these motors should be delivered and installed by the end of May, when all pumping will be concentrated at this station. Then again, there should be a saving in a month or so when the sand filling operations are in full swing and all preliminary work underground in connection therewith has been completed.

The cost of depositing these tailings on the sands dump has been considerable, and the ground now available for dumping has been [illegible]

Reduction Works Improvement.

As previously mentioned, work is proceeding on extending and improving various portions of the reduction works in order to place the plant on an economic basis to deal with 75,000 tons per month. When this work is completed it will not only enable the plant to run more economically, but will also reduce the present maintenance costs, which have been high owing to the plant being worked at so much above the actual milling capacity. These extensions and improvements will also reduce the working costs, which for the past two months have been as high as [illegible].

The improvement in milling to-day is such as to enable the management to maintain a monthly tonnage of from 70,000 to 75,000 tons, and also to justify raising ore of a somewhat lowered milling grade as compared with last year.

As regards current development, I am glad to be able to report that good values continue to be opened up, especially in the lower levels. Since January 1 and up to March 31 the development footage has amounted to 5,141, of which 3,228 feet have been sampled and 2,925 feet were payable, showing an average value of 19.8 dwts. over 26.2 inches, equal to 518 inch-dwts.

Capital Expenditure to be Heavy.

The capital expenditure for the current year, as you are aware, will be heavy. It is essential that the sub-vertical shafts should be sunk as quickly as possible, but in view of stations having to be cut at each level and development of some essential description, it cannot be expected that the rate of sinking will be as rapid as in the case of a deep level shaft sunk from the surface.

The sinking of a sub-vertical shaft from a depth of 3,800 feet to a depth of 5,000 feet is quite a new feature in these fields, and has required a vast amount of consideration and thought to organise the work in view of the fact that the material and men required for the work, as well as the rock from sinking, have all to be handled through the same shaft that is dealing with the whole of the mine's requirements at a rate of crushing of from 70,000 to 75,000 tons per month, but the work has been so well thought out by Mr. [illegible], together with Mr. D. Wilkinson and Mr. Chalkley, that there is little difficulty in this regard.

In addition to the work in connection with the sinking of the sub-vertical shaft, an auxiliary incline shaft is being put down in the eastern section of the mine in order to open up the ground in that area, thereby assisting to ensure having available the stope faces necessary for maintaining the present rate of crushing over the period of sinking of the sub-vertical shaft and the initial development therefrom.

Money to be Expended.

As from April 1 to December 31 next, we have allowed for spending approximately £80,000 on all this work, leaving some £30,000 to £40,000 to be expended in 1924 to complete the work.

Then we have the expenditure in connection with the extension of and alterations to the plant and equipment, including the replacement of the present steel anvil blocks in the mill by concrete blocks, additional tube mills and vats, and alterations to the present system of separating pebbles for the tube mills, and various other items on which it is necessary to expend money in order to make the plant and equipment of the mine capable of dealing efficiently with 75,000 tons per month. It is estimated that there is still £52,000 to be spent to complete this latter work by December 31 next, but we anticipate no expenditure of any consequence on this account next year.

The profits made during the current year we expect will enable the company not only to meet the whole of the above expenditure, but also allow for further payments being made to A shareholders on account of their arrear dividends.

Erroneous Rumours.

Before leaving the subject of capital expenditure, I will refer to erroneous rumours that have reached the directors as to the company having to incur very large sums on capital expenditure over and above the figures quoted above. As far as can be seen to-day, there is no additional large capital expenditure to be incurred beyond what has been stated, with the exception of the cost of a pumping plant which it will eventually be necessary to instal at the bottom of the sub-vertical shaft.

It may be that it is thought by some that, in addition to the money required for shaft sinking, further large sums will be required for the development of the ground to be served by those shafts. This is not correct, as the development costs in these areas will be included in normal development charges to working costs, which for months past have been represented by a figure of from 2s. to 2s. 6d. per ton milled.

The normal development footage is at present taken at 1,500 feet per month, and there is nothing at present to indicate that it will be necessary to increase this footage in order to develop the ground in the areas commanded by

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the new shaft. This shaft sinking programme, when completed, will enable all ore to be handled down to the level of the 5,470 feet contour.

The balance of the ground remaining will, as far as we can judge to-day, be handled by means of incline shafts, which would only be sunk by degrees and as may be necessary in order to open up new levels. By so doing, the cost of sinking would be spread over a number of years. However, it will be a good many years before any such work will be necessary.

In the Shareholders' Interests.

It is to the interest of both classes of shareholders that the arrear dividends on the A shares should be paid off as soon as possible, and, in view of the capital expenditure to be incurred during the year, your directors propose for the time being to adopt a policy of mining ore of a value rather above the average of the ore reserves. The development values at present being opened up throughout the deepest levels in the mine appear to amply justify such a policy.

In conclusion, gentlemen, I feel sure I am expressing your views in thanking Mr. W. E. Turvey, the late manager, and Messrs. D. Wilkinson and Chalkley, for the valuable services they have rendered your company. It is due to the careful and thoughtful work they have given to not only current operations, but to the laying out of the work of the future, that the outlook for the company to-day is so promising.

Since the close of the financial year, owing to Messrs. D. Wilkinson and G. A. Chalkley having, to our regret, resigned their positions as consulting engineer and superintending engineer respectively, Mr. W. E. Turvey has been appointed consulting and superintending engineer to this company, and Mr. B. Orpen, acting manager. The latter gentleman has had the advantage of having been closely associated and in touch with the work on the Robinson Deep as assistant manager. By these arrangements we feel we have ensured a continuity of policy being carried on by two technical advisers who have been in close touch with the present programme of policy since it was laid out, an arrangement which will, I am sure, meet with the approval of shareholders.

I also have the pleasure of informing you that Mr. Edgar Hyman has recently accepted a seat on the Board. I feel sure his services as a director of the company will be helpful in our discussions on matters concerning the affairs of the company. I now beg formally to move the adoption of the report and accounts.

Lucky Shareholders.

Mr. E. M. Hyman said he thought the shareholders could consider themselves very fortunate in regard to the outlook and prospects of the company as revealed by the chairman. Like many other companies they had also passed through very bad times during the past two years, and shareholders had been disappointed at the returns they had received. At the same time it looked to him as if B shareholders had every prospect of receiving handsome returns, and would not regret their investment, and he thought that the company had a great future.

The upheaval on the Rand last year, the speaker proceeded, had the effect of placing most companies in a very unfortunate position. Wages had to come down, and if the working man would only appreciate that the mining houses were out to assist them and not lean so much on their labour unions, which had brought them into this trouble, they would find themselves much better off.

Harmony Wanted.

"I for one do not wish to see labour underpaid or sweated," Mr. Hyman went on. "I am always glad to see a fair day's pay for a fair day's work, but the men will find if they work more in harmony with the managers and officials than has been the case in the past, they will get better support from them. No doubt the Chamber of Mines and the mining companies were much to blame during the war period in giving way in every instance, and paying wages out of all proportion in order to save trouble and strife.

"I hope the demand by one of the unions, which is holding a conference shortly to demand a 30 per cent. increase in wages, which in my opinion is ridiculous, will be properly gone into, and proved to the union concerned that it is not possible for the mines to pay this increase. If it is granted to one set of workmen, another set will be entitled to it, and we shall be back to the position again which will make it impossible to work the low grade mines profitably.

"I only hope that the chairman's forecast will be carried out and that both the mine officials and men will make every effort to work together in harmony."

In reply to a question as to when the B shares would rank for dividends, the chairman stated that this depended to a great extent on the payment of the arrear dividends on the A shares, and that this in turn would depend upon the future profits of the company.

The report and accounts were adopted.

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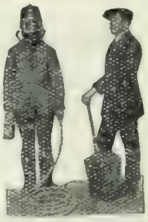

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TOPICS OF THE WEEK.

Mr. Brearley's Addresses on Steel.

We hope, in our next issue, to give some excerpts from the addresses which recently have been delivered in Johannesburg by Mr. Brearley, the Sheffield steel authority. Mr. Brearley is generally admitted to be the greatest expert in the world on the complex subject of steel, its manufacture and heat treatment; and he has a wonderful manner of investing a highly abstruse subject with a great amount of interest even for the absolute layman. At Wednesday night's address, at the Technical Club, there was a well-nigh record attendance, and numerous questions were put to Mr. Brearley, who answered them in his inimitable manner. The thanks of the whole reef are due to Mr. Brearley for his intensely interesting addresses, which have stimulated interest generally in a matter which is of vital consequence to the Reef and South Africa.

The Conciliation Board.

The first public discussion between the workers' unions and the Chamber of Mines since the strike of last year took place this week. A Board of Conciliation—appointed by Government (on the application of aggrieved workers) under the Industrial Disputes (Transvaal) 1909 Act—met to deal with a demand by the mechanical workers on the mines for a 30 per cent. increase in wages. The specific demand was against the Crown Mines, though it was understood that the claim would apply to all mines. The members of the Board are Mr. J. Young (Magistrate of Pietersburg, and formerly Civil Magistrate, Johannesburg), Professor J. G. Lawn (nominated by the Chamber of Mines), and Mr. T. G. Mactie (ex-Chief Magistrate of Johannesburg, and in this instance the nominee of the applicant workers).

The applicants were represented by Messrs. G. Brown, A. F. Crisp and J. M. Hume, and the respondents (Crown Mines, Ltd.), by Messrs. W. Gemmill, S. Evans and P. M. Anderson. The Government White Labour Department, through which the Board was convened, was represented by Messrs. R. H. Miller and A. C. van der Horst. At the commencement of proceedings Mr. Geo. Brown (Boilermakers' Society) stated that the workers on the mines were unable to come out on the present wages, and this was causing grave discontent amongst all classes, expressed not so much in public as at the branch meetings of the various unions. It had been suggested in certain quarters, and published in the Press, that the present demand originated from the officials of the trades unions, but he (Mr. Brown) proposed to bring evidence to disprove such an erroneous idea. Messrs. E. H. Dutton (Secretary, Moulders' Society) and J. H. Hume (District Secretary, Amalgamated Engineers' Union) were called and sworn, and stated that the demands—so far as their own societies were concerned—emanated from the men themselves, and not from the officials. Mr. W. Gemmill (the Actuary and Labour Adviser, Transvaal Chamber of Mines) said he did not in any way suggest that trade union officials had put forward a trumped-up demand. The Chamber had no doubt whatever that the men were anxious for an increase in wages.

The Gwendolin G.M. Syndicate.

Increasing attention is now paid to the outlying gold fields of the Northern Transvaal and it is therefore of interest to note that Mr. F. R. Paxman and partners are now engaged on the exploitation of a 58-claim proposition on the farm Eersteling, in the Zoutpansberg district, which is styled "Gwendolin Gold Mining Syndicate." The gold occurs in quartz reefs running with the schistosity of the country rocks and interbedded with the schists in an approximately east and west direction. There are four reefs, and the following summarised particulars regarding these have been sent us:—

No. 1 Reef.—Width 3 ft. 6in. Colour of quartz, blue. Shaft sunk to depth of 45 ft. and drive in westerly direction 20 ft. Reef cut in 3 places, length of strike proved 300 yards. Assay value (average) 16 dwts.

No. 2 Reef.—Width 30in. Colour of quartz, blue. Cut in three places and shaft 30 ft., length of strike proved 200 ft. Assay value (average) 5·5 dwts.

No. 3 Reef.—Width of reef 15 in. Colour of quartz, blue. Exposed in two places—distance of 100 ft. (in one place shaft 30 ft.). Assay value, 13 dwts.

No. 4 Reef.—Width of reef 3 ft. Colour of quartz, various colours, white predominating. Reef lies very flat exposed in long cutting for 35 ft. and stripped 20 ft. on either side. In centre of reef there is a fissure vein 15 in. wide, which is very rich—visible gold can be seen in it. Gravel on top and mixed with reef; also very rich. The rubble associated with reef pans well, and several hundred tons could be quarried out at very low cost.

The Robinson Deep.

Elsewhere in this issue will be found a full report of Mr. Christopherson's speech at the annual meeting of the Robinson Deep. In the course of his speech Mr. Christopherson said: "As from the 1st April to the 31st December next, we have allowed for spending approximately £86,000 on all this work, leaving some £60,000 to £70,000 to be expended in 1924 to complete the work. Then we cover the expenditure in connection with the extensions of and alterations to the plant and equipment, including the replacement of the present [illegible] blanks in the mill by [illegible] blanks, additional tube mills and [illegible], and alterations to the present system of separating pebbles in the tube mills, and various other items on which it is necessary to expend money in order to make the plant and equipment of the mine capable of dealing efficiently with 75,000 tons per month. It is estimated [illegible] to be spent to complete this latter work by the 31st December next, but we anticipate the expenditure of any consequence on the account next year. The profits made during the current year, we expect, will enable the company to not only meet the whole of the above expenditure, but also allow for further payments being made to "A" shareholders on account of the arrear dividends. It is to the interest of both classes of shareholders that the arrear dividend on the "A" shares should be paid off as soon as possible, and, in view of the capital expenditure to be incurred during this year, your directors propose for the time being to adopt a policy of mining ore of a value rather above the average of the ore reserves. The development values at present being opened up throughout the deepest levels in the mine appear to amply justify such a policy."

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

ELECTRICAL SUPPLEMENT.

A special supplement dealing with electrical enterprises in the sub-continent will appear in the near future. This will embody many new features and will contain much valuable data of special interest to engineers and industrialists.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal will be leaving shortly for Rhodesia and Natal with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

Johannesburg Municipal Power.

Messrs. C. M. Clark and Partner have made a report to the Municipal Council of Johannesburg in which they advise the erection of a new power station at a cost of approximately half a million. This means that the Victoria Falls Power Company will not be called upon to help out the town's supply.

* * *

Modder East.

The report of the Modderfontein East, Ltd., for the quarter ended with March 31st, shows that out of 1,920 feet of development sampled payable reef disclosures were obtained in respect of 175 feet only. The report states inter alia: Grade of ore, working costs and working profit were adversely affected by the temporary loss of some of the best stopes owing to settlement of the hanging wall over considerable areas. Development results were unsatisfactory. High values were encountered in the 2/26 Winze, No. 1 Shaft, but continued for a short distance only. In terms of the agreement dated the 8th December, 1922, between the Company and the Trustees for the Debenture Holders, a further £65,000 Debentures will be redeemed at 1st May, 1923.

* * *

Another Alluvial Diamond Field.

Readers of this Journal will be interested to learn that a new alluvial diamond field has been located in the Cape Colony. It has been known for some time that diamondiferous ground has existed in the vicinity of Mafeking, and various spasmodic attempts have been made to exploit the area.

During the last year a more active prospecting policy has been adopted, and the result is that several promising finds of good ground have been pegged off. A considerable number of small diamonds have been actually found on the ground.

The prospectors have now applied to Government for discoverer's rights under the diamond law. Inspection by the mines department has been of a satisfactory nature and this new area will soon be thrown open as a public diggings.

* * *

Mines Department Statistics.

The following are the principal items to be noted in connection with the statistics for the month of March issued by the Mines Department:—

Labour—Gold Mining:

	Whites No. in Service	Coloured. No. in Service	Total No. in Service
Witwatersrand, Transvaal	17,943	185,308	203,251
Other Districts, Transvaal	624	9,145	9,769
Other Provinces		—	
Total Large Gold Mines	18,567	194,453	213,020
Small Mines	150	1,736	1,886
Alluvial Diggings	36	122	158
Metallurgical Works and old Tailings and Reduction Sites	112	491	603
Totals for Gold	18,865	196,802	215,667
Diamond Mining	2,398	7,519	9,917
Diamond Alluvial Diggers and Prospecting Concerns	7,702	20,449	28,151
Coal Mining and Coal By-Products Works	1,615	32,509	34,124
Copper Mining	203	2,279	2,482
Tin Mining	73	1,002	1,075
Other Base Mineral Mining	180	2,989	3,169
Grand Totals	31,036	263,549	294,585

Output: Gold (calculated at standard rate): Witwatersrand, Transvaal, 742,927·863 fine ozs., value £3,155,757; totals for three months from January, 1923, 2,182,287·938 fine ozs., value £9,269,770. Other Districts, Transvaal, 18,198·770 fine ozs., value £77,303; totals for three months, 52,535·003, value £223,155. Other Provinces, nil. Total gold, 761,126·633 fine ozs., value £3,233,060; totals for three months, 2,234,822·941 fine ozs., value £9,492,925; total, if gold taken at estimated increased value, £9,835,076. Silver, 155,784·753 fine ozs., value £23,368; total for three months, 368,744·254 fine ozs., value £52,648. Diamonds, 108,690·07 metric carats, value £380,236; total for three months, 285,983··35 metric carats, value £965,070. Coal, sales, 928,336·000 tons, value £291,744; total for three months, 2,670,586·000 tons, value £842,746. Copper ore and concentrates, sales and shipments, 84·581 tons, value £5,437; total for three months, 537·111 tons, value £31,574. Tin concentrates and metallic, sales and shipments, 70·060 tons, value £9,583, total for three months, 234·030, value £27,581. Other base minerals, sales and shipments, value £37,452; total for three months, £82,022. Total value, £3,983.880; total value for three months, £11,494,566; total value for three months, if gold taken at estimated increased value, £11,836,717. The Transvaal Chamber of

Mines estimates the value of the March gold output at £4·375 per fine oz., which would represent an increase of £90,869 in the total value of the month's output. Details of diamond output are shown in their proper form in the January and July publications. Note: The figures in this publication are subject to revision, such corrections as are necessary being shown in the annual report of the Government Mining Engineer.

* * *

What Three Mines Spent on Stores and Supplies Last Year.

In view of the oft-repeated assertion which is made by politicians for party purposes that the mines of the Witwatersrand, instead of creating and distributing wealth, merely take wealth out of the country, it will be worth while to note the amounts spent by three mines only last year on stores, mining material and supplies of South African origin. The three mines in question are the Crown Mines, East Rand Proprietary Mines and the Randfontein Central. These three companies between them spent last year nearly £2,400,000 on stores and supplies, and of this amount £1,590,000, or 66 per cent. of the total bill, was paid out in South Africa to South African farmers and merchants for South African products. The figures in respect of each of these three mines are as under:—

Mine	South African £	Per cent. of Total	Imported £	Total £
Crown Mines ...	730,100	70·03	312,405	1,042,505
E.R.P.M.	377,152	67·03	185,483	562,635
Randfontein ...	483,025	61·24	305,694	788,719
Totals ...	£1,590,277	66·43	£803,582	£2,393,859

The following figures show the amounts spent by each of these mines on the more important items of South African produce or manufacture.

	Crown Mines. £	E.R.P.M. £	Randfontein. £	Total. £
Foods	92,986	71,969	96,053	261,008
Timber	71,151	20,769	46,434	138,354
Candles and Carbide	24,039	15,076	17,545	56,660
Explosives	166,733	65,283	83,874	315,890
Lime	15,541	9,602	6,399	31,542
Coal	16,955	122,656	89,382	228,993
Tools	7,739	576	—	8,315
Shoes and Dies ...	9,212	2,524	7,488	19,224
Stationery	4,173	2,428	4,129	10,730
Cement	6,288	833	3,025	10,146
Lubricants	6,219	274	1,754	8,247
Rock Drill Spares ...	5,033	2,842	1,938	9,813

Of course, the operations of these mines were greatly curtailed for the first three months of the year on account of the strike, and had it not been for this the amounts would have been substantially greater. The figures given, however, show how greatly the agricultural and commercial community depends on the Rand for its markets and livelihood.

* * *

Rhodesian Mining Activity.

Mining in Matabeleland shows increased activity, and one result is a substantial reduction in the amount of unemployment. More prospecting is proceeding than for many years. Both the London and Rhodesian and the Globe and Phoenix companies have acquired new properties in the Sebakwe district at substantial figures. The former is erecting plant on its new acquisition, where a large reef body is reported, carrying good values. The Lonely Mine Company are actively developing under option another new property near Bulawayo and sinking a shaft to cut the reef at a considerable depth. Other claims are being opened up in the same neighbourhood in the Queen's Reef direction about 30 miles north of the town. At about half that distance near [illegible] River an important discovery is reported. To the south, beyond Antelope Mine, a well-known but elusive reef is said to have been recovered at considerable width and with high values on the [illegible], formerly the Mystery [illegible] claims. These pieces of definite news, with a longer range of favourable returns, have given great stimulus to the small miners and prospectors, while, as indicated, the large companies are keen to take over any good discoveries.

* * *

The Decline in the Gold Premium.

Although there has been a big decline in the gold premium, the Australian Gold Producers' Association is [illegible] to maintain its organisation. It is the opinion of the Board that, even though sterling returns to parity, it would be desirable, seeing that the maintenance of that parity is uncertain, to continue the Association with reduced expenditure for a period of, say, six or twelve months, so that advantage might be taken of any break in exchange rates to obtain some premium for the industry. The present arrangement under which the Association works is so convenient to producers, and, in the circumstances outlined, would involve such a trifling expense, that it would be a pity to disband the Association until it is reasonably certain that there will be no further material advantage to be gained by continuing it. If and when this stage is reached the *raison d'être* of the Association will have disappeared, and seeing that the remaining interests—industrial and political—of the gold producers are already provided for through other existing organisations the Association could then be wound up. For the two half-yearly accounting periods of 1922 as adopted by the Gold Producers' Association, bonus rates of premium 2s. [illegible] and 1s. 2·9d. per ounce respectively were disclosed. Judging from the present figure, and the recent course of the relation between sterling and the dollar, the current half-year will not yield even these comparatively low returns. A big decline in the average price of fine gold in London has taken place since the beginning of 1922. The January price was £4 17s. [illegible], and the December value £4 9s. 6d.

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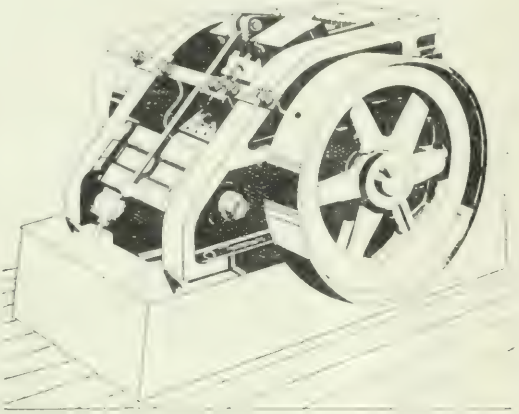

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6in. x 24in.	8 ,, ,,	12—20	11,000 ,,
6in. x 30in.	10 ,, ,,	15—24	13,000 ,,

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The Week in the Sharemarket.

A SAGGING TENDENCY—CITY DEEPS BETTER—NEW STATES SOLD.

Despite an early disposition to improve, the market towards the close of the week has sagged. There has not been much speculative business doing, but the movement of prices reveals one or two spots of interest. The Anglo-American Group languished, except West Springs, which have been an improving market as the result of continued good reports of development. Corner House stocks have been notable for an improvement in City Deeps, regarding which it is considered that good dividends may be confidently looked for on the shares, even although at a higher price than to-day's. Also Modder B has improved on the report that better values are being exposed coming up from Government Areas, towards the southern boundary of the Modder B property. New Modders improved a little on the report of good values in development. Barnato stocks improved in the case of Langlaagte Estates, and declined in the case of New States and Van Ryn Deeps. Nervous holders are selling New States and there is no support. New Consolidated Goldfields interests were chiefly noted by activity in Robinson A shares, which at one time improved in price, but later fell off again. Some wise people are buying Robinson B shares to lock up, for a very long shot. Of the Union Corporation stocks Gedulds have attracted a little interest. Diamonds have been a dull market. Nothing of note has happened in Industrials. Loans and Banks have had the usual quiet business, without marked movements in price. The disposition of the market appears to be good. It is said that Continental selling in London is falling off, so that less oppression may in future be expected from that quarter. A slight tendency is evident of the desire to pick up better class shares for the June dividends, and the numerous meetings which are being held in the course of this month are awaited with interest. It is expected that the present quarter will be a better one for most of the mines.

	Fri. 27th.	Sat. 28th.	Mon. 30th.	Tues. 1st.	Wed. 2nd.	Thurs. 3rd.
Anglo-Am. Corv.	25 3*	25 7½	25 3*	25 3*	25 6*	25 6*
Apex Mines	—	-	6 0*		6 0*	6 0*
Brakpan Mines	68 9*	69 6	69 0*	68 9*	69 6	69 0*
Brick and Potteries.	—		3 0*	3 0*	–	—
Bushveld Tins	0 4*	0 4*	0 4*	0 4*	0 3*	0 4*
Cinderella Cons.	3 3*		—		3 0*	-
City and Subs.	3 0†	2 9*	2 9*	—	2 9*	2 9*
City Deeps	52 0	52 6	53 0*	53 0	53 0*	52 6*
Clydesdale Colls.	—	15 6†	17 5†	—	17 3†	17 3†
Con. Diamonds.	24 3*	24 9*	24 9*	24 6*	24 9*	24 6
Con. Investments		29 0*	29 0*	29 0*	29 0*	
Con. Langlaagtes	12 9*	13 0*	13 0*	13 3*	13 3*	13 3*
Con. Main Reefs	9 6*	9 9	9 6*	9 7½	9 6	9 6
Coronation Colls.	20 6*	22 6*		23 0*	25 0*	
Do. Freeholds		0 6*				
Do. Syndicates	7 0	6 10*	7 0	6 9*	6 10½	6 10
Crown Diamonds	6 5	6 4	6 4	6 5	6 11	6 11
Crown Mines	52 6*	53 0*	52 9	53 0	53 1½	53 3
Daggafontein Mines.	3 5	3 4*	3 4*	3 1*	3 3	3 0*
Durban Rood. Dps.	17 0	17 0	16 10*	16 9*	16 9*	16 6*
East Rand Coals	1 4*	1 4*	1 4*	1 4*	1 4*	1 4*
East Rand Deeps.	0 9†	0 8*	0 8*		0 9†	0 6*
East Rand Minings	10 6†	10 6†		10 6†	10 6†	8 6*
East Rand Props.	4 9*	5 1*	5 0*	5 6*	5 9	5 11
Eastern Golds	0 6*		0 6*	0 6*	0 6*	0 [illegible]
Ferreira Deeps			7 6†	6 9*		
Frank Smith Dmds.	4 0	3 11*	3 11*	3 11*	3 10*	4 0†
Geduld Props.	65 0	64 0*	64 0*	64 9	64 6†	64 6
Glynn's Lydenburgs.	13 0*	13 9*	13 0*	14 0*	13 6*	14 0*
Govt. Areas	109 0*	110 6	110 0	109 6	109 3*	108 9*
Hume Pipes		9 9*		9 6*	10 0†	10 0†
Knight Centrals	5 8	5 8	5 7*	5 8*	5 7	5 6*
Lace Props	—		8 6*	8 6*	8 6*	8 6*
Langlaagte Est.	-	19 7	19 6*	20 1½	20 6*	20 9
Leeuwpoort Tins	3 11*	3 9	3 4	3 4*	3 5	3 6
Luipaardsvlei Est.	5 0	4 9*	4 9	4 9*	4 6*	[illegible] 0†
Lydenburg Farms	3 0*	3 0*		3 0*		
Middelvlei Est.	1 0*	—	1 0*	1 0*	1 0*	1 0†

	Fri. 27th.	Sat. 28th.	Mon. 30th.	Tues. 1st.	Wed. 2nd.	Thur. 3rd.
Modder B's	3 9	24 0	23 9	21 3	21 9	21 10
Modder Deeps	43 6*	[illegible]	43 [illegible]	43 9*	43 9*	43 9
Modder Easts	6 10½	6 [illegible]	6 [illegible]	6 9	6 9	6 6*
Natal Navig. Coll.	26 0	25 0†	26 6*	26 6*	26 6*	—
National Banks		[illegible]				
New Eland Dmds.	16 3	16 6*	15 6*	15 6	16 0*	16 0*
New Era Cons.	7 0		[illegible] 0†	6 9*	—	—
New Geduld Deeps	0 6*			0 6*		
New Kleinfonteins	[illegible] 6†	[illegible] 10†	4 9*	4 9*	4 9*	4 9*
New Modders	78 3	78 9	78 6*	78 9	79 0	79 0
New State Areas	37 0*	37 3	37 0	35 9	35 6	35 0*
Nigels	8 9*	—	8 6*	—	8 9*	8 9*
Nourse Mines	14 3	14 10	14 7	14 [illegible]	14 6*	14 7½
Pretoria Cements	42 0*	42 6	42 3	42 0	42 6*	42 6*
Rand Collieries	1 0*	1 0*	1 0*	1 0*	1 0*	
Rand Nucleus	0 10	0 [illegible]			—	0 10*
Randfontein Centrals	14 3*	14 6	14 6*		15 0†	15 0†
Do. Estates	21 6	21 6	21 4	21 1*	21 9	21 3*
Rouxville Diamonds.	1 4*	1 3*	1 3*	1 3*	1 3*	1 6†
Roberts Victors	7 0*	7 0*		7 9	—	7 9*
Robinson Deep "A"	33 0*	34 3*	34 0*	34 6	35 0	35 0
Robinson Deep "B"	11 0*	11 0*	11 0*	11 0*	11 6	11 4*
Rooibergs	1 0	3 6*	3 6	3 9	3 9*	3 6*
Shebas	—	—	—		3 0*	3 0*
Simmer and Jacks	3 2	3 1	3 1	3 0*	3 0*	3 0
S.A. Breweries	30 0*	30 0*	31 0*	31 0*	—	30 0*
S.A. Lands	5 5	5 6*	5 6*	5 6*	5 8†	5 7
S.A. Reserve Banks	£138*	£139	£138*	£135*	£136*	£136*
Springs Mines	18 6	19 0	19 0	19 0*	19 3	19 0*
Sub Nigels	9 4½	9 4*	9 4*	9 6*	9 7*	9 6*
S.A. Alkali	14 9*	14 9	14 9*	15 6	14 9*	14 0
S.A. Townships	10 6*	10 6*	10 6*	10 9*	10 9*	11 0*
Transvaal Lands	—	—			15 6*	
Trans. G.M. Estates	8 1*		8 0	7 9*	8 0*	8 0*
Transvaal Silvers	15 6	16 0*	16 6	17 0	17 0*	17 0
Tudors	0 3*	—	—		0 6†	
Union 5 per cent.	£101†	£103[illegible]*	£103 *	£101*	£102	£102¼
Van Dyks	1 6†		1 6†		—	
Van Ryn Estates	68 3*	68 6	68 6*	68 0*	68 6*	68 6
Van Ryn Estates				1 0†		
Village Deeps	12 0*	12 3*	13 0†	12 0*	12 0*	12 6*
West Springs	18 6	18 6	18 4*	18 6*	18 6	19 6
Western Rand Est.	3 6	3 9†	3 0*	3 3*	3 3*	3 3*
Witbank Colls				30 0*		
Witwatersrands	15 0*	15 3*		15 6*	15 9*	15 6
Wit Deeps	16 6	16 6*	16 3*	16 6	16 4*	16 3*
Zaaiplaats Tin	6 3	6 0	6 5	6 5	6 4	6 4

* Buyers. † Sellers.

Mining Men and Matters.

We learn that the Sibiwa mine in Rhodesia has just commenced milling.

* * *

The twenty-first annual session of the South African Association for the Advancement of Science will be held at Bloemfontein from Monday, 9th July, to Saturday, 14th July, 1923, inclusive, under the presidency of J. D. F. Gilchrist, Esq., M.A., D.Sc., Ph.D., F.L.S., C.M.Z.S.

* * *

In another part of this issue will be found an article describing some of the machine tools of Messrs. Alfred Herbert, Ltd., of Coventry. Engineers who are interested are cordially invited to visit the S.A. General Electric Co.'s storeroom at 166 Commissioner Street, where Mr. Stevenson will be pleased to meet them.

The Assessment Court have overruled the objections put forward by "The Coronation Freeholds" as to the valuation put upon their 1000 odd stands or erven in the township, and the original estimated value has to stand. The Coronation Syndicate have again started development on a small scale on the Wilgepoort gold mine. The prospects are said to be good.

Barberton Mine Owners' and Managers' Association.

THE ANNUAL REPORT.

The report of the Council of the Barberton District Mine Owners' and Managers' Association, presented at the annual general meeting held recently, is as follows:—

During the past year the usual quarterly general meetings have been held, the average attendance being eight, at which a number of subjects affecting the district were dealt with. The year 1922 will be notorious from a tax payer's point of view because of the imposition of the Employees' Tax. In common with the rest of the Transvaal your Council protested very strongly against the measure. Among others we were in touch with the Transvaal Chamber of Mines, Johannesburg, over the question. This body very kindly kept us fully informed of the action taken to test the legality of the tax in a court of law, and gave us the benefit of its legal advice free of charge. Members were kept acquainted with the question by circulars on various occasions. At present we are making representations to Parliament through the district's member to have the tax repealed. We are glad to report that we have at last secured representation on the local Road Board, the Mining Commissioner having been appointed thereto, but this resutl is likely to be negatived through the Mining Commissioner's post having been transferred to the Magistrate. This question is being gone into at the quarterly general meeting today. The matter of roads and bridges has also been kept in view from time to time, but it seems a hopeless proposition at the moment on account of the financial state of the country, and also because of the present constitution of Road Boards. It is thought that the installing of X-rays apparatus in the Barberton Hospital will be of benefit to the mines here and it has been suggested that our Association should contribute towards the cost. Preliminary correspondence between the hospital authorities and your council has been discussed and the question is to be submitted to the next quarterly general meeting. The draft of the proposed new Gold Law, as published in the Government Gazette Extraordinary of the 15th May, 1922, has been dealt with, and the opinion arrived at that the new law will not affect us. Indeed, from the licence point of view, it will be an advantage. The attached statement relative to the district's gold output speaks for itself; it is pleasing to record an increase of 10,628 fine ozs., valued at £45,000, over the year 1921. This is the first time for over ten years that the district's gold output shows an upward trend, a movement that we sincerely trust will be maintained. A few gold mining ventures are about to commence operations and we wish those interested therein every success. It would appear as if somewhat serious attention has been paid to these fields lately. We deplore the resignation of three members during the year and welcome two new ones. It is a pity that members should resign without assigning a reason therefor. We must be a united mining community if we are to protect mining interests. Nothing can be accomplished by individual effort if the questions at issue affect the whole of the mining industry, and it seems somewhat [illegible] that [illegible] living so far from town and not being able to attend meetings, they do not help the Association. They are mistaken. Only unity of purpose and action can safeguard the district's mining industry, and the greater our membership the stronger will be our position. Membership totals 21 and we have seven honorary members. Our thanks are due to the Government Mining Engineer for sending us the monthly statistics published by his Department, and to Messrs. Thomas Andrews and Sons, Limited, for the use of offices and furniture. Statistics with regard to gold output in the Barberton District referred to in above report:

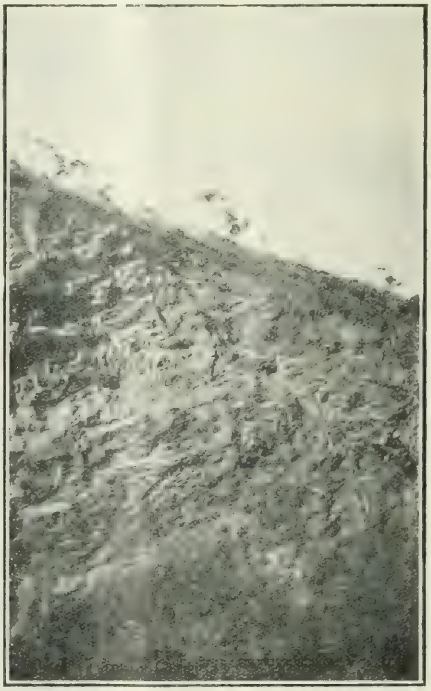
Year	Ozs. fine gold	Value £
1913	86,544,259	367,673
1914	81,779,981	347,280
1915	74,440,098	315,201
1916	71,043,989	301,353
1917	58,252,247	247,440
1918	45,091,778	191,540
1919	42,642,593	181,010
1920	28,821,299	120,347
1921	25,440,702	108,065
1922	36,068,646	153,210

ZOUTPANSBERG.

Mr. Bridgeman was at the Louis Moore yesterday, and Messrs. Macdonald and Aitken are starting work at the Golden Hind mine, [illegible] 3 miles east of the Louis Moore, with a Tremain mill, says the Zoutpansberg "Review" of May 1st.

Mr. Ford, of the Golden Valley mine, is not back yet. He is probably delayed by the difficulty in getting people to work the mine.

There will possibly be a rush Leydsdorp way after the rich strike at "La France."



One of the open faces at the Shamva mine, Rhodesia.

DESIGNS —— DRAWINGS —— TRACINGS

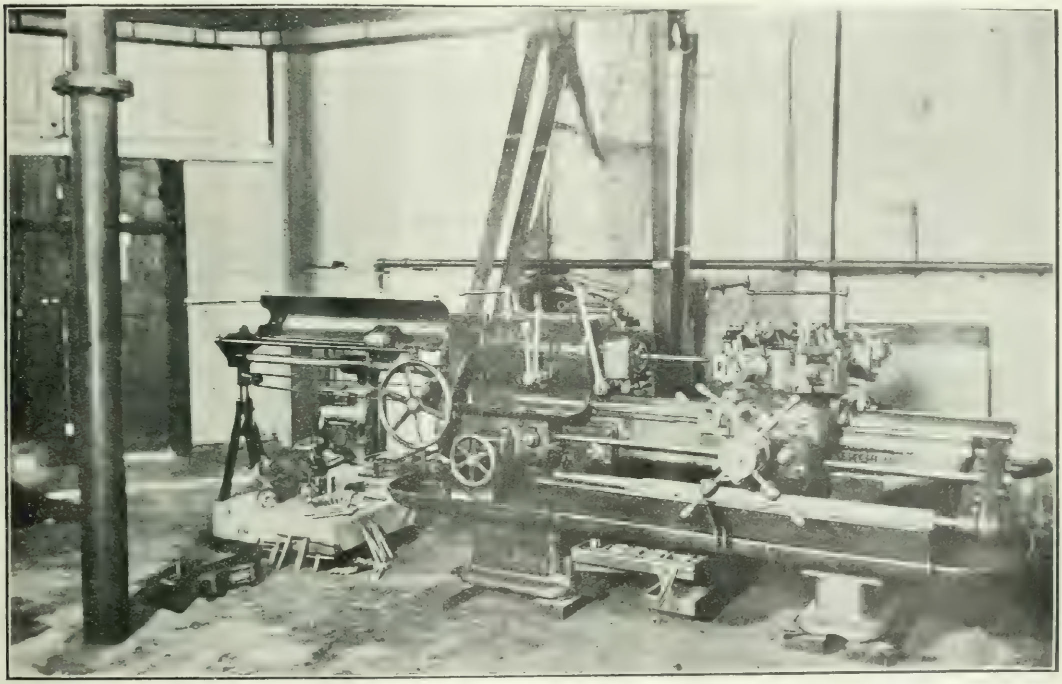
Working Drawings made from clients' sketches and instructions; mechanical and structural work handled for inspection or supervision; drawings prepared for patent specification.

J. E. PARKER, M.I.Mech.E., M.A.I.M.E.,
'Phone 1760. Box 559, Pretoria.

The Machine Tools of Alfred Herbert, Limited.

THE HEXAGON TURRET LATHE AND THE BALL-BEARING DRILL.

Of great interest to engineers is the exhibition of Alfred Herbert machine tools at the storerooms of the S.A. General Electric Co., Ltd. The two leading features are the famous Hexagon Turret lathe for rapid bar work and the ball-bearing drill. The former is something quite out of the ordinary, and the illustration with this article hardly does it justice. This lathe is from entirely new designs and embodies a number of very valuable improvements which experience in building and operating this class of lathe has shown to be desirable. It produces work up to 30 in. long from rough bars up to 2 in. in diameter. Work longer than the nominal capacity of the lathe may be frequently handled by first machining one end, after which the work is reversed, the part machined at the first operation supported in a true bush in the spindle, and the second end finished. Work such as boiler stay bolts, having two threaded portions separated by an unthreaded portion, can be produced by an arrangement of tandem die heads, so that the two threaded portions may be screwed at the same time. Work to be drilled, bored, reamed or tapped, requires simply the necessary tools, all of which can be furnished to order. Work of curved outline, such as handles or bails, is dealt with by broad form tools carried in the cut-off rest. A steady bush is used to support the work from the turret. Taper work of greater length than can be turned by broad form tools as mentioned above, can be dealt with by a taper turner. The single pulley head provides sixteen speeds in either direction by sliding gears and friction clutches. The driving pulley and the whole of the transmission shafts run on ball journal bearings. The main spindle is mounted on large roller journal bearings. The thrust of the spindle in both directions is taken on a large double ball thrust bearing. The headstock is formed as an oil bath from which the gears, clutches, and other parts are automatically lubricated. The spindle is started, stopped and reversed by a lever near its left hand [illegible] and the sliding gears are operated by two levers on the top of the head, which are automatically interlocked to prevent the engagement of two sets of gears at the same time. The friction clutches on the intermediate transmission shaft and main spindle are controlled by the two levers in front of the head. All the levers are at hand. A speed plate on the head indicates how each speed is obtained. Speeds considerably higher than those that have previously been in use with this size of lathe are provided at the top end of the speed range, so as to ensure that they can be utilised with cutters made of the best high-speed steel, and are easily obtained owing to the use of ball bearings and the absence of rubbing bearings. The bed is a dry sand casting, and its construction is one of the outstanding features of the lathe. The guides are completely protected from chips, dirt and injury, by covers attached to the turret slide, the length of the covers being such that when the slide is moved to its limit of position at the right hand end of the bed no part of the guiding surfaces is exposed. The headstock is cast with recesses which allow the covers to run under and past it when the turret slide is brought up towards the chuck. The covers are not merely carried over the surfaces of the bed but actually rest upon them, so that the ingress of even fine dust is positively prevented. Similar but shorter covers protect the bed to the right of the turret slide, these being amply long enough to afford protection against any chips which may fall off the tools. The guiding surfaces of the bed being thus completely protected and lubricated by a felt wiper, the wear between the turret slide and bed is reduced to a negligible quantity. The space in the bed is that of a box girder, the only openings being those necessary for the escape of chips and for the collection of the [illegible]



One of the famous lathes manufactured by Alfred Herbert. Ltd.

The Turret Slide.

The turret slide is of great length and is positively constrained by flat slides at the front and back. Its form is such that the tools on the turret can be brought close to the chuck, and it can be clamped to the bed when required by a powerful lever. The turret slide front apron is totally enclosed so that it forms an oil bath for the gears, worm and other moving parts. All the gears are of either steel or bronze, the rack pinion being of a chrome nickel steel. Six self-selecting stops on the hexagon stop rod trip the feed and also acts as dead stops. The feed motion is engaged and also tripped by hand by a single lever. The quick power traverse motion is operated by a lever at the front of the slide. The gearing moves the turret slide through the same rack and pinion that are used for the feed motion, and as these are at the front of the bed and close to the guiding V's there is no tendency to twist the turret slide on the bed. The splined shaft which actuates the mechanism is driven by a link belt from the main pulley, and an important safety feature consists in this belt being wholly enclosed in a cover similar to a gear guard. The pilot wheel on the apron is always free except when operated by hand, and so avoids all danger when the turret slide is being traversed by power. The hexagon turret allows bars to pass clear through it. The tool holes are relieved for rather more than half their circumference so as to prevent tools and bushes jamming in the holes. Power rotation of turret is engaged by the same lever that withdraws the turret lock bolt, and allows the turret to be moved rapidly through any number of stations at any position along the bed. The automatic and dead stops act in either direction. They are carried by a hexagon bar extending along the front of the bed, which is geared to rotate with the turret. The stops trip the feed, and act as dead stops. If required two or more of the stops can be used on one face of the hexagon bar. The accurate indicator on the pilot wheel shaft enables dead lengths to be obtained within fine limits. Its effect is to ensure uniform pressure on the stops independent of changes in the pressure on the cutting tools as they become dull. The double toggle chuck has a powerful grip and will hold black or bright bars. It can be adjusted for variations up to ⅛ in. in diameter (1-16 in. each way), and is opened and closed by a steel lever while the lathe is running or at rest. The parts subject to wear are hardened and tempered. The bars are held by round jaws in three sections, which are used with the spacing pieces provided, the latter being inserted between the jaw sections. For hexagon and square bars four jaw sections are used and no spacing pieces. The bar feed is simple and convenient, and contains no mechanism that is likely to get out of order. A traveller carrying a self-centring supporting chuck for gripping the bars slides on the tail rod, and is moved by sprocket and chain, operated by a hand wheel conveniently located to the left of the headstock. For holding square bars special bushes are required for use with the supporting chuck.

The Patent Dial Feed Motion.

The feed changes are operated by a patent dial feed motion. The dial is marked to indicate the feeds in consecutive order. To obtain any feed, the dial is simply rotated until the number corresponding to the required feed comes into position. The feed is reversed by a lever. The feed box is driven from the main spindle by a link belt which is entirely enclosed. The gears in the feed box are all of chrome nickel steel, as are also the splined shafts, sliding keys, spacing washers between the loose gears and reversing clutch. The mechanism is lubricated automatically. Motor drive: The lathe is very suitable for motor drive, as any kind of motor can be used.

The Ball-Bearing Drill.

The ball-bearing drill is another feature of the exhibits. The chief direction in which the modern ball-bearing drill excels the old type of so-called "sensitive" drill may be briefly indicated by three words, viz.: Output, convenience, durability. It is obvious that ball bearings have greater mechanical efficiency than plain or rubbing bearings, but it might be thought that a machine with plain bearings would give an equal output if the total power put into it were enough to provide the same amount of power at the drill point after the frictional losses had been overcome. In other words that the difference is only one of cost of power. This would only be true if plain bearings could be constructed and lubricated so as to withstand the required pressures at the high speeds at which the work can be done, and it is perhaps conceivable that a moderately good high speed machine might be designed having plain bearings made of anti-friction metal with forced lubrication and proper provisions for retaining the oil in the bearings. Such a design would of course be expensive, and necessarily somewhat of the nature of a "tour de force." In spite of all precautions it would in the end be mechanically less efficient than a ball bearing machine and much more troublesome to keep in order. The advantages of ball bearings lie not only in their mechanical efficiency, but in the practical effect that they can be run at any required speed without heating and without lubrication troubles, and also that their running is independent of the pressure put upon them within the limits of sensitive drilling conditions. Another important advantage of the ball bearing design is that its working efficiency is practically independent of the operator, who is generally of the unskilled or semi skilled type, and, in fact, often a boy or girl. The absence of any practical limit to the speeds of ball bearings enables the smallest sizes of high speed drills to be run at their proper speeds even on a machine large enough to drill a 1 in. hole. The saving in friction also enables a given size of machine to drill a much larger hole than would be possible with plain bearings, and for a given size of hole permits a coarser feed to be used on account of the greater amount of power available at the drill point for driving a heavy cut.

The Ball-Bearing System.

The high mechanical efficiency of the drills is obtained by the use of annular ball bearings for every running bearing, including those of the spindle, the idler pulleys, the counter-shaft and the loose pulley. Although ball bearings are used freely wherever required, the design includes none that are wasted, only the minimum number being used. For instance, the spindle itself has only one bearing, this being situated at the lower end of the feed sleeve. For the spindle and its driving pulley combined, only three bearings are required. The reason for the use of the annular type of ball bearing is that it never requires adjustment and therefore is never wrongly adjusted. Also, being standard trade articles, the bearings can be replaced easily by the user of the machine, in the somewhat unlikely event of failure. This feature renders the machines virtually everlasting.

British Shipping.

According to Lloyds' list shipping laid up in the United Kingdom ports on April 1 totalled 516,000 tons, compared with 732,000 on January 1, and 1,112,000 in July, 1922.

British Unemployment Barometer.

The number of persons on March 12 recorded on the live register of the employment exchanges in Great Britain as wholly unemployed was 1,302,800. On March 19 it was 1,260,500 - 225,378 fewer than at the beginning of January, 1923.

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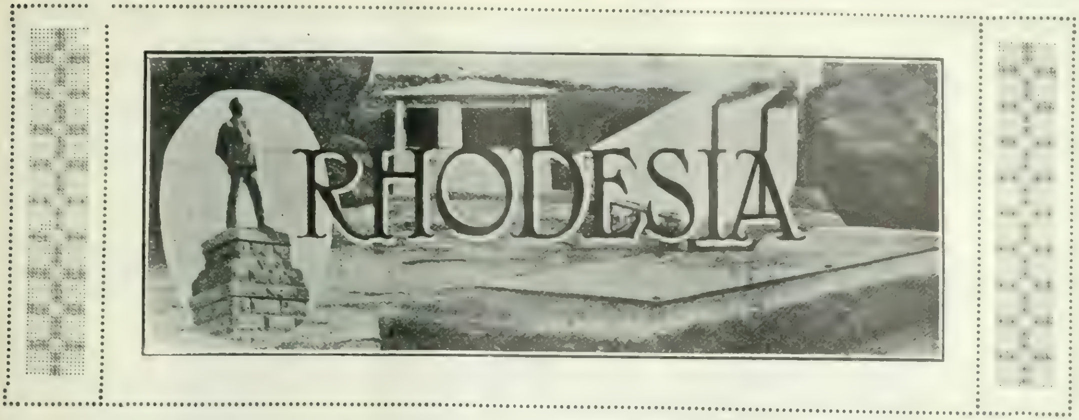

Rhodesia Native Labour Bureau.

A REDUCED DEMAND—THE ANNUAL MEETING.

At the 12th ordinary general meeting of the Rhodesia Native Labour Bureau, Mr. D. Hawksley, managing director, who presided, said during the year there was only a small demand for Bureau labourers, the number distributed to employers being 4,676, which number was sufficient to satisfy the requisitions of members. A very much larger number of natives could have been recruited had the Bureau been able to find work for them. "The small demand for Bureau labour is attributable to two causes one being the unusually large number of local natives who turned out to work owing to the necessity they were under to earn money for food as their own crops had failed; the other cause being the drought and general depression which resulted in many employers of labour, especially farmers, being obliged to curtail their labour complements. It may be instructive if I quote figures showing the numbers of alien natives who have entered Southern Rhodesia in the past three years. These numbers include both independent and Bureau natives:—

For the year 1920 the number was	55,871
For the year 1921	37,037
For the year 1922	32,074

This represents a decrease in numbers in each year the decrease being both in the numbers of independents and the numbers of Bureau natives, and is not confined to one or to the other.

"It is right to draw attention to the invaluable support that the mining industry gives to the Bureau by providing us with this great financial assistance. I think many non-mining members fully appreciate the benefit they derive from this, but others are apt to overlook it.

"A few observations on the present outlook may not be out of place. The applications for the supply of Bureau labour for the current year are so small that we have been obliged to suspend recruiting in the greater part of Northern Rhodesia and Portuguese East Africa, though in certain districts we have kept on a nucleus of our staff to enable recruiting to be restarted as soon as the demand for labour warrants it. I would especially draw the attention of members to the fact that it is necessary for them to make application for labour they require well in advance of the time they will need it. As I explained at length last year it is not possible for the Bureau to recruit and keep on hand any considerable number of natives merely on the chance of our being able to find them work, and we are accordingly obliged now to limit our recruiting to coincide with the applications we have. We can obtain plenty of labour, but it takes time to recruit and bring it down, and therefore sufficient notice of your requirements is necessary. Another matter that has been under consideration by your Board is whether it would not be useful to the alien native and to the employer if we were to enlist recruits in this country at the ports of entry. Such recruiting would only be for labour on short service conditions, and would, I am sure, meet a need felt by those natives who arrive in this country with their food finished or nearly so and are unable to find employment immediately or to find it near the port of entry. . . . Inquiry was made amongst those members of the Bureau who take a considerable number of labourers from us whether such recruiting would be useful to them and meet with their support. The response, I regret to say, was not sufficiently encouraging and we regretfully had to come to the conclusion that the time has not yet arrived for opening recruiting stations within our border. But the Board has decided to commence operations on these lines at any time that sufficient support is received from employers to make it a practicable proposition. I have no doubt that once started, the value both to the natives and to employers of such recruiting agencies would be increasingly great."

Mr. Gresson thereupon, in seconding the motion for the adoption of the report and balance sheet, said he would like to pay a tribute to the managing director. In the past one heard a great deal of the brilliant capabilities of his predecessor. He (the speaker) was quite sure that the efficiency and well-being of the Bureau had in no way been impaired by the management falling into Mr. Hawksley's hands. The organisation was efficient, and he could not help feeling that possibly members might derive greater benefit from the expenditure incurred if there was a larger scope for the work of the Bureau, work on the lines mentioned by the committee of inquiry. Personally, he had always felt and had always urged that the introduction of a large quantity of alien labour into the country without having an efficient organisation to control it was more or less what he called a half-baked notion. It was interesting to note that the recent Congress of the Rhodesia Agricultural Union passed a resolution asking for the expenditure of £5,000 on the feeding and care of these alien natives en route to this country. He had no doubt that the new Government when it had settled down steadily into the saddle would give that important matter the consideration it deserved.

The motion was agreed to.

The next business was the election of two members to the board of management, one to represent the joint stock company members in the place of Mr. J. G. McDonald, who retired but offered himself for re-election, and the other to represent members other than joint stock companies in the place of Mr. P. H. Gresson, who retired and also offered himself for re-election. Both were re-elected.

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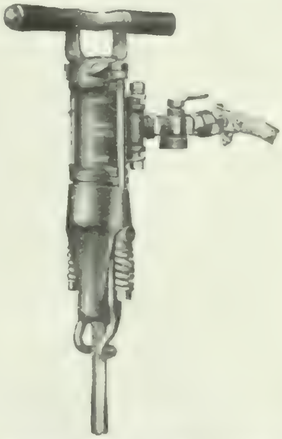

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Bill is 7 years old and weighs 56 lbs.

The Rotator he is operating weighs 38 lbs.

Bill is drilling a 2 ft. hole, in hard sandstone at the Noonan Quarry at Randwick, New South Wales.

The drill is working under full pressure (note dust around the hole). The photograph (unretouched) shows almost no vibration as shown by the sharpness of Bill's hands, of the hose, and of the drill itself.

But illustrates one feature of Rotator popularity.

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TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET BUT HOPEFUL—IRON AND STEEL CONDITIONS HERE AND OVERSEA—MERCHANTS' VIEWS ON PROVINCIAL COUNCIL'S NEW TAXATION PROPOSALS—TIMBER AND BUILDING MATERIALS—UNION'S IMPORTS AND EXPORTS IN APRIL—ELECTRICAL GOODS—LONDON METAL MARKET QUOTATIONS.

General.

Business generally in the iron and steel section has been rather quiet during the past week, notwithstanding the spurt which the end of the month imparts as a rule to orders from the mines. One big importer stated that things during the past week or ten days had improved somewhat. Steel plates, this authority stated, are firming up, and, in his view, as most merchants were not likely to import at the high ruling prices overseas with the low selling prices obtaining here, there was every probability of a scarcity of stocks being witnessed here. A captain of commercial industry interviewed this week said that both town and country were exceedingly quiet, and, in his opinion, the only gleam of hope for the farmers, and eventually for the commercial community, was the approaching mealie crop, which would, provided the locusts were not too active, of course put money into the pockets of the farming community, and eventually give Rand merchants a show. Outlying districts also, including Rhodesia, are quieter in respect of inquiries. They are also feeling the prevalent slow conditions. This keen observer of events saw no improvement in the European outlook, which seemed to be going from bad to worse. On the top of this, there is this new Turkish menace in Syria, which we could not possibly understand. The whole European position is a very intriguing one, and leaves the commercial world guessing as to the immediate future. In the meanwhile, of course, merchants are unable to gauge the trend of business, and are perforce obliged to limit their commitments to zero standard. It is again emphasised in commercial circles that we can hope for no improvement in general business conditions until some settlement is come to between Germany and France. At the present moment, things are looking blacker than ever and the upshot of events in Europe must be awaited with patience. Adding to the general complication comes the news of the lock-out of the boilermakers in British shipyards, with its potentialities."

It is recognised in the commercial world that the comparatively poor results attained by the gold mining industry during the past quarter is only a passing phase, and that the second quarter of the year will show decided improvements. The falling away of the gold premium during that period must not be forgotten, and it is hoped that when that fall is complete (as sooner or later it will be) the industry will have succeeded in reducing working costs to a level which will allow operations to be profitable without such adventitious aid. At the moment it cannot be denied that some of our mines are working perilously near the margin, and the community is anxiously looking forward to something that will take us out of the ruck. *Apropos* of this, merchants are very perturbed at the new taxation proposals of the Provincial Council. A canvass this week of leaders of commercial industry regarding the proposed increased taxation elicited the fact that the majority of people were so disgusted at this new act of ineptitude on the part of the Provincial Council that they readily acknowledged they had not thoroughly studied the question. They are heartily sick of the Transvaal Provincial Council, and, while acknowledging that if needs must we shall have to put up with the increased imposts—to submit to the inevitable while that body is in power—it is generally thought that this is their swan song—their death blow. While it is recognised that money must be got to carry on the schemes now under way and in contemplation, it is thought that there are ways of economy on present expenditure without adding to the present imposts. In the opinion of very influential commercial men, such action on the part of the Provincial Council is bound to scare capital away from the country and discourage all further investment on the Rand. The proposed additional taxation has not yet become law, but the community is much concerned at such proposals being formulated, and hopes confidently that they will be defeated.

The engineering shops are keeping fairly busy; no overtime, just sufficient to keep their machines going against better times shortly expected.

An influential importing firm of mining materials this week said the tone generally in business was better. Those firms with heavy stocks must score; but they would, of course, be unable to replace such stocks at present selling prices here. Prices, without exception, he said, were advancing, but merchants were not profiteering, as they had not the backing to do it. Incoming shipments are costing more and are bound, he said, in view of the European situation, to cost still more until normal conditions again prevail oversea. He likened the present position to that which obtained in 1919. At any time a violent drop might occur; as soon as the Ruhr is able to export manufactures againprices must go down, with the result that factures again prices must go down. Caution, therefore, was the keynote in respect of importations. In the opinion of this important merchant, the position in town was better now than it had been during the past 12 months.

Iron and Steel.

There has been the usual end and beginning of the month fillip in business, but on the whole things have been quiet during the past week, and merchants, in view of the unsettled state of European affairs, are not very sanguine as to the immediate prospects of recovery.

To the courtesy of a leading merchant in the iron and steel world we are indebted for the following excerpt from a communication from his London agents: Prices in England continue to mount up, but the advance made in the prices of iron and steel commodities are now so great that for the time being business is checked. On the other hand, the Ruhr position shows no signs of a settlement, and Germany is buying large quantities of iron and steel in this country (England), particularly steel for shipbuilding purposes. Herr Hugo Stinnes alone is reported to have placed 30,000 tons in both coal and coke—strong markets being the crux of the whole situation while the Ruhr position remains as it is, and if the Germans and French remain at loggerheads prices will go higher still, while on the other hand, in the case of an agreement being come to, prices must slip back. In 1914 we could fall back on the United States for supplies when the Continent was cut off. To-day we cannot. The Americans are busy and appear likely to be busier, as the American railways have come into the market with their large orders, and it is confidently stated that the various United States steel plants will be kept busy for 12 months to come. There was a good deal of neglect there during the latter years of the war, and when the armistice came prices were so high that only repairs and extensions were undertaken. According to the latest statement from the United Steel Corporation their order books are so full that they have practically sold their output. We have had Americans here offering to [illegible] of British material at current market prices provided we could guarantee reasonably early deliveries. We have also had [illegible] inquiries from Germany. We know some German orders have been placed in this market, particularly for blooms, billets and shipbuilding materials. [illegible] for joists, angles, [illegible] £10 10s. tons. The question is how long will it last, and from what we can see there are no immediate prospects of relief. In the ordinary way more furnaces would be blown in for the production of pig iron, but the drawback to this is that so far as coal is concerned we are at the present stage just under 300 million tons per annum. Coal, like everything else, is sold ahead, but a good deal of it has been sold to the Continent, and, of course, British steel works have also their contracts. When they were asked to make arrangements to start up more furnaces they found coal and some had already been disposed of, so that they are unable to increase their ore production. Under the circumstances it is unlikely that an immediate drop in price will be seen. There does not seem to be any prospect of an early settlement between the French and the Germans. It would be a very great menace to the steel industry of this country if the Lorraine and Ruhr districts came under French control. Affairs in the Ruhr and other occupied territories of Germany are, we understand, something terrible, and unless a settlement is come to it will take a very long time for conditions to resume normal.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ½, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s., cheques plates, 27s. 100 lb.; imported flats, ½ x 3-16, ½ x ¼, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅝ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s., round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ⅛, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 3 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. lb.; phosphor tin, 2s. 9d. lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 60s. and upwards; barbed wire, "Shorthorn," 69 lb., 13½ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Britain: Mail Advices: Iron and Steel Outlook.

In mail week the conditions of stringency were still apparent in practically every department of the iron and steel markets, but here and there a tendency towards easier prices had developed. At the present high levels buyers are showing a disposition to hold off the market; in fact, re-sale parcels of pig iron have been offered at a reduction in order to effect sales. Trade with the Continent is dead to all intents and purposes, owing to suspicion that exists regarding the ability of Continental works to make good their promises of delivery.

Pig Iron.

There is a distinct tendency to entertain business at lower rates than the £6 5s. for foundry. No basic pig iron is obtainable.

Semi-Finished Material.

High prices have been paid for prompt material. Billets are going at £9 10s., £9 for blooms, and £9 5s. for sheet bars, but supplies are scarce. Thomas quality wire rods are in demand and £10 10s. is being offered without success. The price of tinplate bars has been advanced to £10 less a rebate of 7s. 6d. to South Wales works.

Finished Materials.

Belgian steel bars are quoted at £9 10s. f.o.b., but little business is being done. A general distrust regarding Continental deliveries has checked business.

Swedish Iron Prices.

Per ton, f.o.b. Swedish port: Charcoal pig iron, £7 14s.; steel billets, £17 17s. to £20 15s.; steel wire rods, £20 15s. to £23 12s.; dead soft open-hearth rolled bars, basis price, £13 5s. to £14 8s.; rolled charcoal iron bars, basis price, £17 17s.

Tinplates.

South Wales manufacturers have advanced the minimum price of tinplates by 1s. 6d. per box to 24s. The strength of the position is indicated by the fact that many of the works after the advance demanded 27s. to 26s. The price of tinplate bars has been advanced to £10, less rebate of 7s. 6d. to South Wales works.

Business with Germany.

There is, says *The Ironmonger* in mail week, irritation in the iron and steel trades at what is regarded as the insufficient protection extended to British traders by the Government in connection with the occupation of the Ruhr Valley. In the meantime the Franco-Belgian-German game of beggar-my-neighbour goes merrily on. The latest news is that letters have been received from the German manufacturers in the Ruhr, stating that the material ordered is lying at the works ready for despatch, but that owing to the action of the French and Belgians it cannot be sent off. In these circumstances they demand immediate payment, and suggest that the buyer should arrange through his country's representatives for the carriage of the goods to Britain. Failing compliance with these terms, the Germans say that they will consider the contracts cancelled. The point of the latter argument is that prices have advanced over £2 per ton since the orders were placed. Representatives of British firms who have visited the Ruhr say that the French appear to be deliberately blocking the transport of goods to Britain.

Quotations.

Staffordshire common bars, 14s.; galvanised corrugated sheets, 23s. per cwt.

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Time and again, a call for repairs is due to preventable friction in the bearings of an engine or machine. The halting of that unit often halts the output of the entire plant.

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You will find the cost of Gargoyle Lubricating Oils, high-grade as they are, an absurdly small item when checked against the total cost of slowed down production.

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South Wales Steelworkers.

An increase in the average net selling price of 2s. 7.93d. per ton for the three months ended February 28, 1923, means to the workmen who follow the iron and steel workers' sliding scale a wage increase of 1¼ per cent. from April 1. The wages, therefore, for that date until June 30 will be the standard rates plus 52 per cent.

Labour—Skilled and Unskilled.

In the principal centres of the motor engineering industry the present weekly time rates of wages of skilled fitters and turners range from 52s. to 60s. 11d. a week, and those of engineers' labourers from 37s. 6d. to 43s. 6d. a week.

Import Duties in Occupied Germany.

As from March 25 the 10 per cent. *ad valorem* duty on exports has been abrogated, and the German import duty originally in force reimposed. Further concessions to traders are foreshadowed by an announcement in the French Press of the inauguration in next week of "a new commercial regime."

Works Re-starting.

After being closed for over two years, R. Thomas and Co.'s Ely Tinplate Works at Pontyclun (Glam.) are re-starting.

Oils and Chemicals.

Business in oils and chemicals in Britain is increasing [illegible]. Oil for domestic lamps and stoves is 11d. to 1s. 1d. per gallon. Oil in steamship bunker quantities has been advanced 5s. per ton in price, and is now £3 10s. per ton. Diesel engine oil has also increased in price, and is now £4 5s. to £4 7s. 6d. per ton. Lubricating oils from £11 5s. to £27 10s.; machine and engine oils, 2s. 1d. to 2s. 8d. per gallon. Motor spirit: Petroleum spirit, 1s. 7d. to 2s. 1d. per gallon. Methylated spirits, 2s. 1d. to 2s. 5d. per gallon. Turpentine: The market is rising; present quotations 11s. 3d. for American spot and 82s. 9d. for July-December. The stocks in London are estimated at 13,000 barrels. Linseed oil: Spot, 42s. 6d.; September-December, 39s. Tar and tar products: Crude tar is quoted at £5 to £5 5s. per ton. Road tar is 32s. 6d. to 35s. per 40 gallons. The price of creosote has been raised again, and is now 9d. to 9½d. per gallon. Caustic soda is £20 to £21 per ton; nitrate of soda, £13 5s. to £13 10s.; borax, commercial crystals, £28 per ton; sulphate of ammonia, £16 to £17 3s. per ton. Glycerine is dearer, crude, 80 per cent., being £60, and pure £85 per ton.

United States: Pig Iron.

The blast furnaces are quoting higher prices at 35 dollars for third quarter delivery. Quotations are also firmer for near delivery, No. 2 foundry being quoted at Eastern Pennsylvanian furnaces at 31 dollars, Western Pennsylvanian furnaces at 31 dollars to 32 dollars, at Buffalo 29 dollars 50 cents to 31 dollars 50 cents, and at Birmingham 27 dollars. There are heavy export inquiries for pig iron from the Continent, which, so far, have been without result, as overseas buyers—owing to the fully employed capacity of the United States—can only obtain supplies by outbidding the domestic consumer. Heavy sales of coke for export have been made, it is estimated amounting to 100,000 to 250,000 tons. The market price now is 12 dollars 50 cents to 13 dollars seaboard, and the freight rate on the cargoes for the Continent 5 dollars 25 cents to 5 dollars 50 cents.

Finished Materials.

The new discount for fencing wire is 65 per cent. The price of steel pipe has been advanced 6 dollars per ton. Plates, shapes and bars are quoted at 2 dollars 40 cents to 2 dollars 50 cents, and railroad spiked bolts at 4 dollars 25 cents. Copper is easier at 17.25 cents, tin 46.95 cents to 57.35 cents, lead 8.25 cents to 8.35 cents, spelter 8 cents to 7.90 cents.

The Bethlehem Steel Company is carrying out a contract for the castings for a new vehicular tunnel under the Hudson River to connect the States of New Jersey and New York. The plans provide for two similar tubes. In a part of each of these tubes is a section lined with metal, measuring in all about two and a half miles. Each tube is 29 ft. 6 in. in diameter for the greater part of its length, with a short section, 30 ft. 4 in., for better ventilation on the steepest grade. The lining is composed chiefly of grey iron, though some parts of it are cast steel. The segmental rings have a length of 30 inches along the axis of the tunnel, and each ring is made up of 15 separate segments. There are approximately 5,400 rings in the tunnel, making a total of about 81,000 castings. Of this number, 75,600 will weigh about 1½ tons each, and the remainder about 800 lbs. each; making a total weight of over 115,000 tons.

Japan.

The imports into Japan in 1922 of steel and metal materials, including pig iron, blooms and billets, totalled 325,372 tons, of which 128,248 tons were imported from China, 99,857 tons from British India, 12,712 tons from Britain, and 8,614 tons from the United States. The imports of bars, rods and angles amounted to 214,966 tons, and the aggregate tonnage of bars, rods, plates, sheets and wire imported was 820,400 tons, of which Britain provided 137,650 tons, the United States 110,600 tons, Germany 149,100 tons, and Belgium 65,400 tons.

Timber and Building Materials.

Business and stocks in this section are quite fair; prices are very firm, and from all accounts from oversea prices are likelier to increase than drop in the immediate future.

The price of bricks remains much about the same; but the demand is at present big. At the moment quite a number of big jobs are in operation and the trade is looking confidently in the immediate future to increased activity. In our weekly canvass we were impressed with a new glazed Klompje brick, which has recently been put upon the market, samples of which were shown us and which can be inspected at the office of Mr. L. Lazarus, fourth floor, Permanent Buildings. These bricks, which are really first class, can be delivered at job at about £14 per 1,000. Further samples of a good buff Klompje brick at £12 per 1,000, delivered, can also be seen at the above address. Local industry seems here to be advancing.

Timber Prices: 3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings 11d.; beaver boards, 3⅞d.; floorings, 6d. to 6¼d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d; corrugated iron, 9d., very firm. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft. 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12in., 6s.; 15in, 7s. 6d.; 18in., 9s.; dry red oxide, 14s. per 100lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

The Iron and Steel Merger—Outputs and Profits—Enyati Colliery secures a Big Contract—Special Rhodesian Features.

The South African
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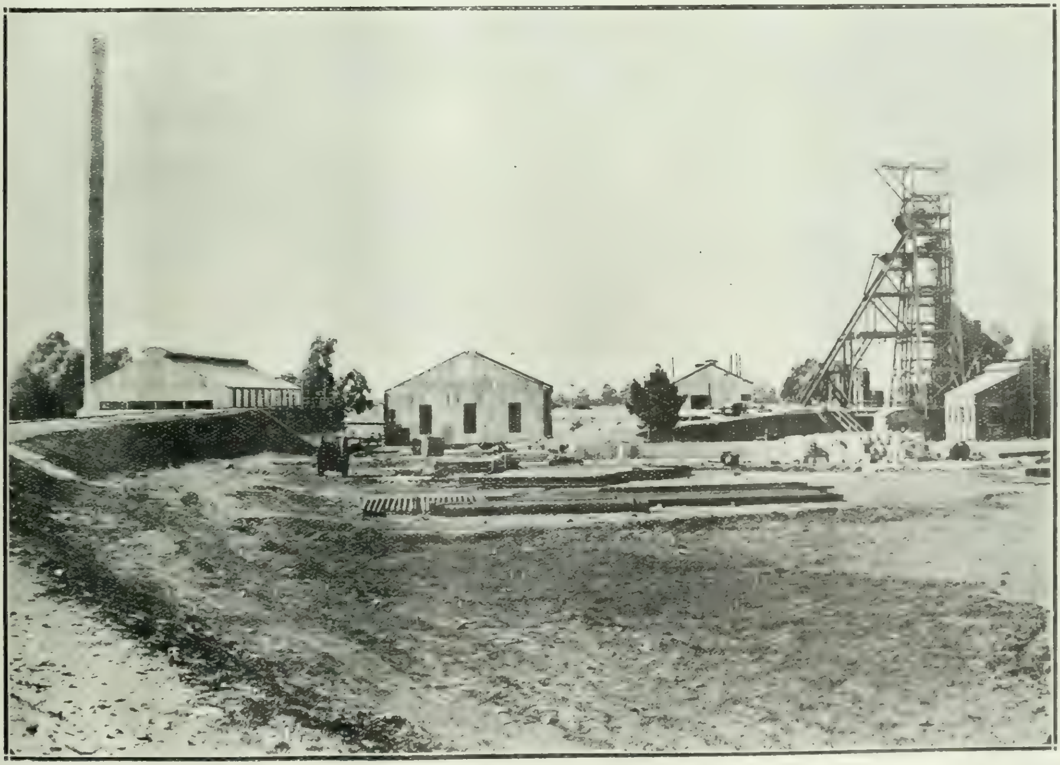
Established 1891.

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MAY 12, 1923 No. 1650.

Constructional Work at a Great Far East Rand Mine.



Brakpan Mines No. 3 Shaft, Boiler House, Engine Room and Shops, showing Water Cooler under erection in the foreground. Photo taken specially for the "S.A.M. & E.J." a few days ago.

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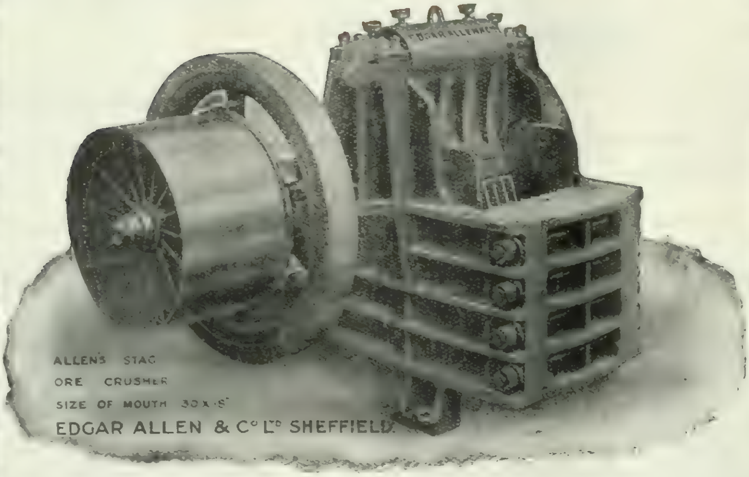

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South Africa's Iron and Steel Industry.

A FURTHER STAGE IN DIFFICULT NEGOTIATIONS REACHED—NEWCASTLE IRON AND STEEL TO BE ABSORBED BY S.A. IRON AND STEEL CORPORATION—" WITH APPROVAL OF UNION STEEL CORPORATION "—PARTICULARS OF AGREEMENT.

After protracted and difficult negotiations, an agreement has at last been reached between the three principal iron and steel concerns of South Africa.

It may be recalled that some little time ago amalgamation proposals as between the Vereeniging enterprise, the Union Steel Corporation, and the Pretoria works, or, rather, the nucleus of the Pretoria works as represented by the S A. Iron and Steel Corporation, were come to. The Newcastle Iron and Steel Company, which a year or more ago completed a large blast furnace with accessory plant, was not, however, incorporated in the scheme.

Now, however, a provisional agreement has been arrived at which will be submitted to share and debenture holders for their approval, and should this deal go through, the Newcastle Iron and Steel Works will become partners in the enlarged enterprise.

It has been known for a considerable time past that negotiations have been on foot to place the budding iron and steel industry of South Africa on a unified basis, and with this object in view, overseas experts and representatives of big European iron masters are known to have recently been closely investigating the position.

Provisional arrangements have now been reached whereby a solution of the various complex problems surrounding the manufacture of iron and steel on a large scale seems practicable.

With the object of bringing the three concerns into line, an extraordinary general meeting of the shareholders of the Newcastle Iron and Steel, Limited, will be held on the 17th day of May, 1923, at 3 p.m., in the board room of the Johannesburg Stock Exchange, for the following purpose, and to pass, with or without modifications, the following resolutions:—

(1) To approve of, ratify and confirm the action of the directors of the Company in entering into a certain Deed of Agreement dated the 28th day of March, 1923, between the South African Iron and Steel Corporation, Limited, and this

THE BIG LEWIS & MARKS ENTERPRISE ON THE VAAL.

An Interior View of a Portion of the Plant of the Union Steel Corporation, Vereeniging.

Company, [illegible] the approval of the Union Steel Corporation of South Africa, Limited, in which it was agreed that the Company, subject to the conditions set out in the agreement and provided the agreement shall not become null, void and of no effect under Clause 8 thereof, sells to the South African Iron and Steel Corporation, Limited, the whole of the assets, property and undertaking of this Company for and in consideration of the issue to this Company of 175,000 fully paid up shares of £1 each in the said South African Iron and Steel Corporation, Limited, and further that the said South African Iron and Steel Corporation, Limited, shall pay the whole of the liabilities of this Company as on and from the date of sale, save and except the liabilities of this Company for and in respect of the Debenture Loan.

(2) That of the said 175,000 fully paid up shares of £1 each to be issued by the said South African Iron and Steel Corporation, Limited, the present holders of debentures of the Company (at present £62,675 [illegible]) shall be entitled to receive one fully paid share of £1 each for each 10s. of the capital secured by such Debentures, and also for each completed 10s. which may have accrued due in respect of interest on the 31st day of March, 1923, and the issue of the said shares to the debenture holders shall be deemed to be in full settlement of all claims by them against the Company under the debentures with all interest thereon.

(3) That after allowing for the discharge of the debentures as aforesaid, shareholders shall be entitled to receive four shares in the South African Iron and Steel Company, Limited, for every five shares held by them in the Newcastle Iron and Steel, Limited, any fractions of shares that might be due to be sold as a whole by the directors of the Newcastle Iron and Steel, Limited, and the proceeds distributed to the owners of the fractions in accordance with their respective claims. The balance of shares after allowing for settlement of the debentures and shareholders shall be paid to the directors of the Newcastle Iron and Steel, Limited, as remuneration for their services since the inception of the Company.

The feature of the week has been the announcement of the proposed amalgamation of the Newcastle Iron and Steel Co., Ltd., with the South African Iron and Steel Corporation, of Pretoria, under which, subject to confirmation of shareholders, the former company sells its assets, property and undertaking for 175,000 fully paid-up shares of £1 in the South African Iron and Steel Corporation. In respect of the £175,000 debentures, the Newcastle Company are entitled to one fully paid-up share of £1 for each 10s. of the capital secured by such debentures. After allowing for the discharge of the debentures, shareholders are entitled to receive four shares in the South African Iron and Steel Co., Ltd., for every five shares held by them in the Newcastle Co. The proposed amalgamation is—it was elicited from a director of the Newcastle Iron and Steel Co. this week—the best that could have happened to all concerned, and it is hoped that everything will shortly be satisfactorily settled and the production of South African pig iron become an established fact. There is no doubt, he said, that there is a good demand for pig iron from the local foundries, many of whom have repeatedly asked when they could be supplied with same. The prices of pig iron in the future are likely to be almost one-half of what it costs to-day. In view of the present scarcity in Europe local pig iron supplies will come in most opportunely. The amalgamated outputs of these works should enable the Government's requisite in respect of bounty of 15s. per ton on iron and steel production of 50,000 tons per annum from native ores, being complied with in the near future.

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NATIVE AMBULANCE CHAMPIONSHIP.

The Meyer and Charlton mine was the centre at which the representative native mine ambulance teams of the four mining districts of the Rand on Sunday decided the Rand championship in first aid. Each team of five natives, mainly East Coast boys, were set the following test by the judges, Drs. A. Frew and L. G. Irvine and Mr. A. M. Anderson: "You are told that a native has been working on pipes at a sump underground and he has fallen into the water. He has been pulled out, and his breathing has just stopped. He also has a compound fracture of both bones of the left leg, with the wound on the outside of the leg, which is bleeding badly. Treat and transport to a place indicated by the judges."

The test was expressed excellently to the teams in their own tongue by Mr. Goss, and the Modder B, Randfontein Central, City Deep and Rose Deep teams in turn fell to and stopped the bleeding, restored the breathing, dressed the wound splinted the fracture and duly transported their respective patients to the indicated spot.

The judges must have found it somewhat difficult to differentiate between the teams, the work done being described by the large number of persons present as excellent, and their decision at the termination of the proceedings indicated their difficulty; Modder B carrying off the Red Cross Society's prizes with 74 marks out of 100, City Deep second with 73, Rose Deep 71, and Randfontein 59.

Dr. Irvine subsequently addressed the natives, and explained what the judges wanted them to do, and pointed out in which way they had not quite fulfilled requirements. Mr. Herbert Johnson, the manager of the mine, expressed the pleasure he felt at the extension of first aid work to natives, which was not only of value to them on the mines, but also in their homes, often hundreds of miles away from doctors, and decorated the members of the winning team with silver crosses, and presented them with a goat.

The boys expressed their satisfaction by loudly cheering the judges, and the mine management, which latter provided a feast at the compound.

DIAMONDS AND THE SENATE.

Replying in the Senate on Monday to Senator Wolmarans, who asked whether the Government, as the largest shareholder in the Premier diamond mine, had taken the necessary precautionary measures to ensure that the De Beers Co., which (as the rumour had it) had taken over the mine, would not be able to close that mine arbitrarily, or cause it to be worked on a small scale to the detriment of the Government as the most interested party, the Minister for Mines and Industries replied that it was unnecessary to take special precautionary measures. "The Transvaal law on diamonds," he said, "requires the mine to be worked to the satisfaction of the Minister, and the Mines Department keeps in close touch with the position on the mine." The Government, had not, he continued, in reply to a further question, stipulated that the De Beers Company should contribute 60 per cent. of all its profits on diamonds to the Government, as had been done by the Premier Mine.

Big Finds on the Vaal.

Further large finds on the New Vaal River Diamond Company's estate, Sydney-on-Vaal, during the past few days include a 34-carat, a 12¼-carat, and a 12-carat stone, wires our Kimberley correspondent. For the month of April the output from the estate amounted to £7,100. The following diamonds were found on the Pniel Estate during April: A 38-carat stone which realised £1,075; a 22-carat £506; a 27¾-carat, £525; a 15½-carat, £330; a 28-carat, £256 10s.

Natal's Coal Trade.

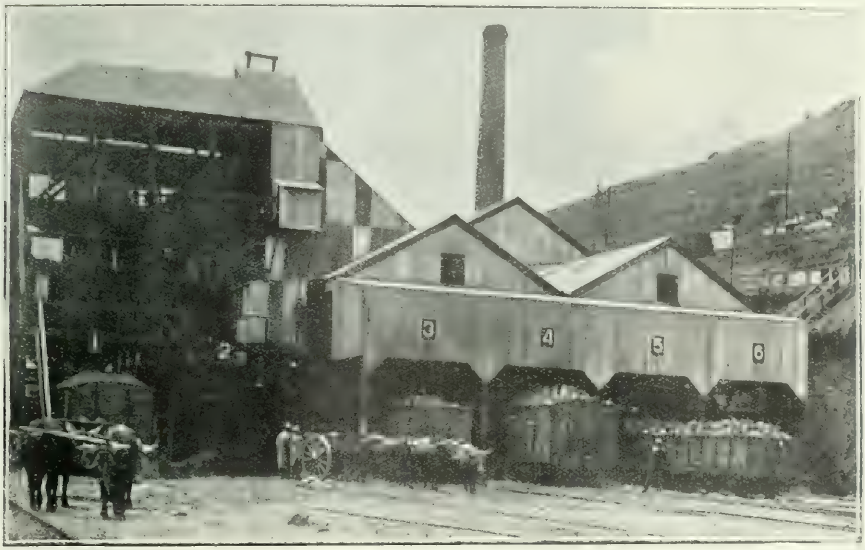
RECENT SUBSTANTIAL IMPROVEMENT—A BIG CONTRACT FOR THE ENYATI COLLIERY.

There has recently been a considerable improvement in the Natal coal trade, and the output of the collieries—or, rather, the tonnage sold—which had declined to 288,393 tons in October last, has recently increased to between 300,000 and 400,000 tons again. The January and February outputs were each in the neighbourhood of 310,000 to 315,000 tons, but in March there was a sharp upward movement to 362,536 tons. Prospects of a further increase appear to be good, but it is understood that at the present time the collieries are threatened by a shortage of native labour.

In March there were 27 collieries producing in Natal, and the tonnage mined was 464,909. Slightly over 20 per cent. of the coal mined was sorted out as waste, and 362,536 tons were sold for a total realisable value at pit's mouth of £145,781, or 8s. per ton.

As indicating the high esteem in which the best of Natal coal is held in maritime circles, it is interesting to learn that the Enyati Colliery has recently secured a big contract for the supply of coal to the Deutsche Ost Afrika and Woermann lines now known collectively as the Deutsche Afrika Dienst. The steamers of this service have recently become a factor of increasing importance in African shipping circles, and the fact that the big colliery of the Mauritian group has secured the contract for the supply of coal to the German steamers is certainly a feather in the cap of the Vryheid field.

THE LEADER OF THE MAURITIAN GROUP OF COLLIERIES.



The great Enyati Colliery, Vryheid District, which recently has entered into a contract for the supply of coal to the German Steamship Services.

The Luipaards Vlei No. 10 Shaft.

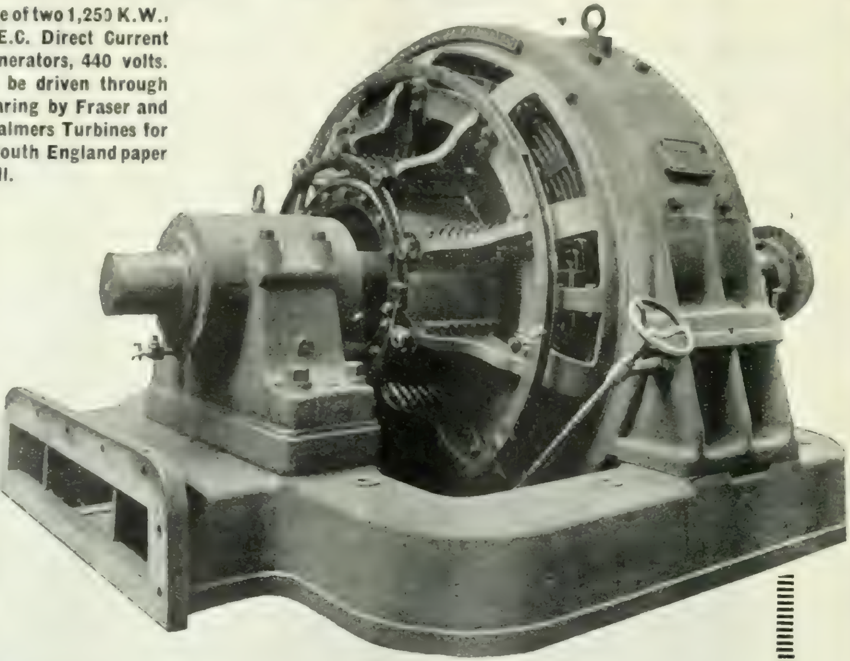
ABANDONED BY THE CORONATION SYNDICATE—NEW SITE TO BE LOCATED.

The shaft located by the Coronation Syndicate on the farm Luipaardsvlei No. 10 to the south of Randfontein has reached a depth of 155 feet, but it has now been decided to suspend further sinking operations on account of bad ground. The official cable despatched to London on this subject states:

"After full consideration and instructions from Government mining inspector, board of directors have decided discontinue sinking shaft at present depth 155 feet, owing to unsafe nature of ground. Board of directors have decided to start new shaft immediately 140 feet north, thereby only necessitating changing round winding plant. Present shaft timbers will be recovered and utilised. This will only mean a delay of about two months in reaching reef horizon. The loss and additional expenditure involved will not be heavy."

A Hopeful Outlook.

The first sod in connection with the sinking of the new shaft was cut on January 21, and the operations were commenced under the most hopeful conditions, states a communication from the company, boreholes having revealed a remarkable richness at comparatively shallow depths, making the proposition for all practical purposes an outcrop one. It was anticipated that the shaft would cut both pay reefs of the series at under 1,000 feet in the vertical, and it was expected that this stage of development would be reached before the end of the present year. The prospect was regarded as one of the most promising of the West Rand developments.



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Rush to Peg New Goldfields.

MANY WOULD-BE MINE OWNERS—A PROMISING PROSPECT—PROSPECTORS FROM ALL PARTS—NOTES ON WATER, FUEL AND TRANSPORT QUESTIONS.

The throwing open of the Western Bushveld goldfields on the 8th May was attended by a considerable number of peggers, and a large claim area was marked off along the the strike of the reefs on Batavia, Kameelboom, Portugal, and other farms in the neighbourhood.

Conditions on the Fields.

Mr. H. Gamble, who is largely interested in the new fields, writes to us as follows regarding water, fuel and transport conditions. *Inter alia*, he says: Regarding the water supply, while it is true that the nearest supply at present existing is that of the Marico River, it must be remembered that the country is a dolomite area and that abundance of water is always procurable by sinking shallow wells anywhere in the neighbourhood. As a case in point, a farmer close by Batavia put down a well about 160 feet deep, which has given him for years a supply of over 10,000 gallons a day, the water difficulty is easy of solution and presents no hindrance to mining operations. The second point is that of fuel. The supply of wood for steam-raising purposes is ample for present requirements. At the same time, investigations have been made to locate suitable coal areas as near as possible to the centre of gold mining operations. I am pleased to say that our efforts have been successful and that we shall be able to obtain coal at a distance from the mine not much greater than that which exists to-day between the Rand and Witbank.

So far as regards transportation, we are within 36 miles of Gaberones, a well-known distributing centre on the Bechuanaland railways. A good road, suitable for motor or wagon transport, exists now. Another good road runs to Rustenburg, 90 miles away, and, when it is borne in mind that the initial difficulties of the Rand were infinitely more detrimental to mining than are those of the Batavia area, it will be admitted that they will be overcome in due course without incurring too great a burden or strain on the development of the new mining area.

You will be interested to learn that I and my associates have together taken over the whole of the present owners' rights on Batavia and Kameelboom, including discoverers' rights, together with those on Portugal, and other farms in the neighbourhood, on all of which the Batavia reefs have been located. A vigorous policy of development is now in progress, and the work of opening up the properties will be prosecuted in order to create an ore reserve and to commence milling at as early a date as possible.

Prospecting Operations.

In connection with this field and its history it will be recalled that some few months ago there was considerable excitement in local mining circles on account of the discovery of gold in an area lying adjacent to the Bechuanaland border and in the vicinity of the Marico River. About the middle of October last a special commissioner of *The Star* and *Mining Journal* was dispatched to the district, and the impressions gained by him on this tour of investigation were recorded in a special series of articles. These articles attracted much attention at the time, inasmuch as several remarkably optimistic opinions were being expressed in regard to the new auriferous area. It was, for instance, contended in some quarters that water difficulties and the absence of any considerable number of trained prospectors were the only hindrances that stood in the way of the area blossoming forth into a second Witwatersrand. *The Star* and *Mining Journal* representative pointed out, however, that the dominant question there was that of values, as in all other mineral fields. The special commissioner expressed the opinion that whilst promising indications had been noted at several points, much more work was necessary before any definite opinion could be expressed as to the future of the goldfields and their value over any extensive area.

Since then comparatively little has been heard of the discoveries, but it has been known that a good deal of steady prospecting work has been in progress, and that not only on Batavia and Kameelboom and Portugal, but at other farms along the same line of formation a great deal of exploratory work has been in progress.

In the latest report of the Transvaal Consolidated Land and Exploration Company it is, for instance, stated:—"Considerable attention was attracted to the Rustenburg district during the year by the reported discovery of payable gold reef on and near the Government farms Batavia No. 858 and Kameelboom No. 857, on which discovery rights were granted by Government and which are now being proclaimed. Sweethome No. 166 and Hampton No. 768 on the same formation, but further east, were also reported to carry payable gold. The company made close investigation of its farms Mooiplaats No. 41 and Nooitgedacht No. 222 in the first area and Mecklenburg No. 615 and Karreebult No. 613 in the latter area, but with negative results. Options were secured over several likely farms on the formation, but the results were not encouraging and the prospect was abandoned."

Nearer the Bechuanaland border, however, much more satisfactory results have been obtained, and it is understood that on Tuesday, when the farm Batavia was thrown open for pegging, a large number of prospective millionaires staked their claims.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

May 15.—Modder B (a), 11 a.m.
E.R.P. Mines (a), 12 noon.

May 15—Modderfontein Deep Levels, Ltd. (a), 11 a.m.
Geduld Proprietary Mines, Ltd. (a), 12 noon.

May 17.—Rose Deep (a), 10.30 a.m.
Village Deep (a), 11.30 a.m.
Geldenhuis Deep (a), 2.30 p.m.

May 17.—Transvaal Consolidated Land and Exploration Co., Ltd. (a). 12.15 p.m.

May 17.—Union Corporation, Ltd. (a), 11 a.m.

May 21.—Meyer and Charlton (a), 11 a.m.
New Goch Gold Mines (a), 12 noon.
Roodepoort United Main Reef (a), 3 p.m.
West Rand Consolidated (a), 4 p.m.

May 22.—Cinderella Consolidated (a), 11 a.m.
Aurora West (a), 12 noon.
Rand Collieries (a), 3 p.m.
New Steyn Estate (a), 3.30 p.m.
Sacke Estates (a), 4 p.m.

May 22.—City Deep (a), 11 a.m.
Robinson G.M. (a), 12 noon.

May 25.—Crown Mines (a), 10.30 a.m.
Durban Roodepoort Deep (a), 12 noon.
Rand Mines (a), 2.30 p.m.

May 25.—New Kleinfontein Co., Ltd. (a), 11 a.m.

May 25.—Apex Mines, Ltd. (a), 10.30 a.m.

May 28.—Consolidated Langlaagte Mines, Ltd. (a), 11.30 a.m.
Langlaagte Estate and Gold Mining Co., Ltd. (s), 12.15 p.m.

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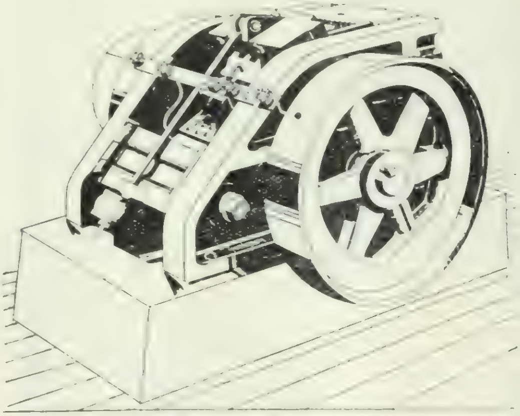

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Standard Sizes. Jaw Opening.	Capacities. Tons per Hour to ¾in. Cubes.	Horse Power.	Weights.
6in. x 12in.	4 Long Tons.	8—10	6,500 Lbs.
6in. x 18in.	6 „ „	10—14	9,000 „
6in. x 24in.	8 „ „	12—20	11,000 „
6in. x 30in.	10 „ „	15—24	13,000 „

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The Last Annual Meeting of the Knight Central.

TWENTY-SIXTH GENERAL GATHERING OF SHAREHOLDERS—SPECIAL MEETING DECIDES ON LIQUIDATION.

The twenty-sixth ordinary general meeting of shareholders in Knight Central, Ltd., was held on May 8. Mr. Frank Raleigh presided, and said:—

The operations during the early part of last year were adversely affected by the strike of workmen on the Witwatersrand and in consequence of which working losses were incurred by the company during the first four months of last year, totalling £15,100. For the remainder of the year profits amounting to £22,200 were made, thus leaving on balance £7,100 as the working profit for the year, which is increased to £11,200 when taking interest earned, etc., into account.

The past year's recovery yield is the lowest in the history of the mine, being only 4½ dwts. per ton, which is about 0·6 dwt. lower than the yield obtained in 1921. The price received for gold was 14s. 7d. per fine ounce below the average price of the previous year. These two factors have caused a reduction in the revenue of 6s. 3d. per ton, as compared with 1921, equal to a reduction of 24 per cent. Working costs fortunately showed a reduction of 4s. 10d. per ton, which partly offsets the loss in revenue.

The appropriation account shows an improvement of £2,750 after providing £9,050 for the purchase of 57,319 of our own shares held by the Union Custodian of Enemy Property. If allowance is made for this purchase, there is actually an improvement of £11,800 for the year, instead of £2,750 as disclosed by the account. The balance of appropriation account you will see is £183,400, of which £165,950 is in the form of cash and investments.

Second Half-Year's Results.

I would draw your attention to the results obtained during the second half of the past year, when a record monthly tonnage was milled, averaging 31,950 tons per month, at a cost of 16s. 6d. per ton, and a profit of 2s. per ton from a yield of 4·145 dwts. per ton. The working profit realised during this period amounted to £18,668, and while it is true there was no expenditure on shaft sinking or development, these results, together with those obtained during the first four months of this year, coming as they do at the end of the mine's career, are evidence of efficient work done by the Manager and his staff.

It will be clear from the report before you that the mine has now arrived at the stage when profits can no longer be earned. Towards the end of last year it was apparent to your Board that, whilst the mine could struggle on for a few months longer, even into this year, the end was in sight, and the time had arrived when shareholders should be called together to consider the liquidation of the company. Accordingly, a circular was issued to shareholders on the 3rd November last, advising that it was not expected that profits could be earned after the end of January, and at the same time the Government Mining Engineer was notified of the early closing down of the mine.

The report shows that the payable ore reserves on 31st December last consisted of only 25,400 tons of a value of 5·6 dwts. and contains the Board's recommendation that shareholders should now place the company in liquidation; immediately after this meeting an extraordinary meeting of shareholders will be held to consider the voluntary winding-up of the company.

Claim Area South of the Simmer Dyke.

As you know, the company owns a large claim area south of the Simmer Dyke, equal to about 655 undeveloped claims, and whilst we have no reason to doubt that the Main Reef series is continued in this claim area, the results obtained, prior to the decision to discontinue development, during the five years ended December, 1917, in the bottom workings of the mine, south of the Simmer Dyke, showed a payability of only 11 per cent.

The Consulting Engineer's report for the year 1917 states in reference to the exploitation of the claims south of the Simmer Dyke:—

> "The distance explored on the strike is about 2,900 feet, and, on the dip of the reef, about 1,400 feet.
>
> "Driving has been done on eight levels, from the 13th to the 20th inclusive.
>
> "About 16,375 feet have been sampled, giving an average assay value of 3·5 dwts. over a stoping width of 61 inches.
>
> "This development has exposed a total of 910,000 tons, but only 101,200 tons of this can be classed as payable."

These are the factors which determined the Board on the policy of discontinuing shaft sinking and development.

The Commission of Inquiry.

You are aware that a Commission of Inquiry was appointed by the Government to investigate the Board's decision to close the mine, and its findings are given in the Directors' report before you, as follows:

(1) The immediate cause of the closing down of the mine is the depletion of the reserve of payable ore in the portion of the mine served by the existing shafts following on the decision arrived at in 1917 to stop shaft sinking and to confine development to the area already served by those shafts.

(2) We are satisfied that within the limits laid down by this policy, every reasonable effort has been made by the Management to prolong operations as long as possible. We have no suggestions to make by which the life of the mine can reasonably be expected to be prolonged which do not involve the exploration of the company's property in depth.

These conclusions amply support the Board's decision in calling shareholders together to wind up the company.

The Committee states:—"In the existing situation there seems to us only two possible ways in which mining can be continued, namely:—

"(a) The expenditure of large sums for the opening up of the deeper ground;

"(b) The working of the mine by such person or persons as will undertake the risk of losses in working the area of ground already developed and available for development, which the present owners are not prepared to take."

With regard to (a), I am satisfied that shareholders are not prepared to put up the funds required to open up our extensive southern claim area which would necessitate an expenditure of considerably over £1½ million, because the values encountered south of the Simmer Dyke do not justify such a speculation.

In regard to (b), it is evident that if the company can no longer work the mine at a profit, no other person or persons can do so, firstly, because there is no payable rock remaining in the mine, in which circumstances the Board will not be prepared to hand over the plant and equipment to anyone, thereby delaying its realisation, and, secondly, because no one would come forward with the necessary funds to open up the deep-level claim ground. Since the close of the year, operations for the four months ending 30th April have produced a working profit of £18,210, and it is expected that the mine will close on or about the end of this month. I now beg to move that the directors' report, balance sheet and accounts for the year ending 31st December, 1922, be received and adopted.

The report and accounts were adopted.

SPECIAL MEETING.

At the special meeting of shareholders held on the 8th May at 2.30 p.m., Mr. F. Raleigh presided and said:—

The meeting has been convened for the purpose of considering and, if deemed fit, placing the company in voluntary winding up. The proceedings to-day naturally follow the decision made in 1917 to discontinue shaft sinking and to limit development to the few points where payable values had been exposed. When this decision was taken the cash and cash assets of the company amounted to £93,260. After paying a dividend of £67,500 in 1920 and expending £9,100 in purchase of company's shares, we have to-day about £202,800 on hand in the form of cash and cash assets. There has thus been a net profit of £186,140 earned since the decision referred to was taken. That the mine should have carried on for six years after the decision referred to and have provided so large a sum as £186,140 in so-called profits is, I think, a surprise to many of you. This has been due to two important facts: first, the arrival of the gold premium in 1919, and second, the opening up of a highly payable block of Main Reef ore south of the Sinmer Dyke, about which you have been fully advised from time to time.

In view of the business of the meeting, I should like to give you some figures representing the financial history of the company; you are somewhat familiar with them, as they have been quoted by me on previous occasions. Those which I propose to give you bring the position up to the end of last month.

Financial History of the Company.

The company was formed in 1895, that is 28 years ago. The amount of cash working capital subscribed on its formation and subsequently was £847,000. This sum was wholly expended in development and equipment of the mine, and in addition £248,000 of profits earned were appropriated for the same purpose. Thus the cash capital invested in the mine under the heading of shaft sinking, development and equipment has been £1,095,400. Milling was commenced in February, 1909, and to the end of April of this year 4,241,018 tons have been crushed, yielding gold to the value of £4,970,768. Working costs have absorbed £4,405,595, leaving a profit of £565,173, which, with sundry revenue of £25,392, was increased to £590,565. This profit has been dealt with as follows:—

Re-invested in the undertaking	£248,413
Paid in Taxes	17,785
Paid in Dividends	112,500
Purchase of company's shares	9,098
	£387,796
Leaving balance of Cash and Cash Assets on 30th April last	202,769
	£590,565

Allowing for the final realisation of the company's assets it is easy to see that after over a quarter of a century of active operations, shareholders will lose more than half the original working capital subscribed, and during this time they have received no interest whatever on their investment.

During the time the company has been in existence it has spent:—

On Capital Expenditure	£1,095,400
On Working Costs	4,405,500
On Taxes	17,800
	5,518,700
On company's shares	9,100
Total Expenditure	£5,527,800

the greater portion of which has been expended in this district on wages and for plant, stores and materials.

Whilst the circulation of money that has resulted from the working of the property amounting to £5,518,700 has been an important factor in the life of the district community, to shareholders it has produced a dismal result. The risks of investing in mining properties demand that a higher rate of remuneration should be forthcoming than in the case of ordinary commercial undertakings. This is well instanced in the case of this company, as you can judge by the results I have regretfully had to put before you to-day.

Other Assets.

In addition to the cash and cash assets of £202,800, the company owns the following assets:—865 mining claims; 2 machine stands; 1 water-right; 120-stamp reduction plant with cyanide works complete; offices and quarters; workshops; headgears and winding plant and underground gear; sundry buildings and equipment.

It is not possible for me to give you an estimate of the sum to be received by the sale of the fixed assets, as the question of demand so largely enters into the sale of second-hand plant.

Disposal of Claims.

With regard to the claim ground, the board has in the past endeavoured to get the Witwatersrand Company, which is situate on the eastern boundary, to carry their drives into our claim area with the object of testing the values on our behalf. In this we were unsuccessful. Further, we later approached the same company to ascertain whether any terms could be made for an amalgamation of our claim area with that company's, also without success. In these circumstances, the board is not sanguine that the liquidators will be able to obtain a purchaser for any portion of the claims now held, but it is the intention of the board to recommend the liquidators to retain a strip of ground on our eastern boundary.

Should liquidation be decided on, certain payments have to be made under the existing Miners' Phthisis Act which are estimated to amount to £34,000 and the liquidation expenses will have to be provided for. Against these payments can be set the value of the clean-up of the reduction works.

The company's liability under the proposed new Phthisis Act, now before the Union Parliament, will exceed this figure.

The chairman proposed that the company be voluntarily wound up. This was seconded by Mr. Wolff and carried unanimously.

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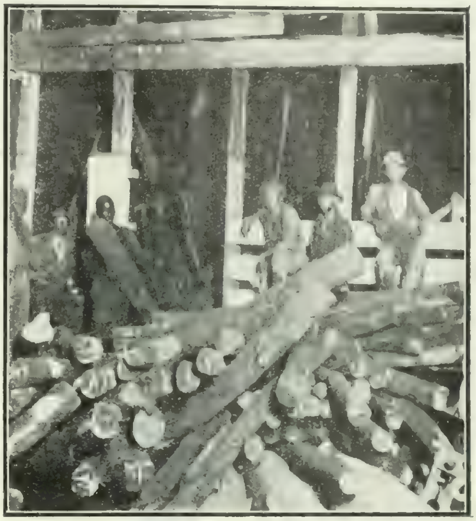
What a Big Mine Accident Looks Like.

THE RECENT DISASTER AT BLOCK A, RANDFONTEIN.
TWO REMARKABLE PHOTOGRAPHS.

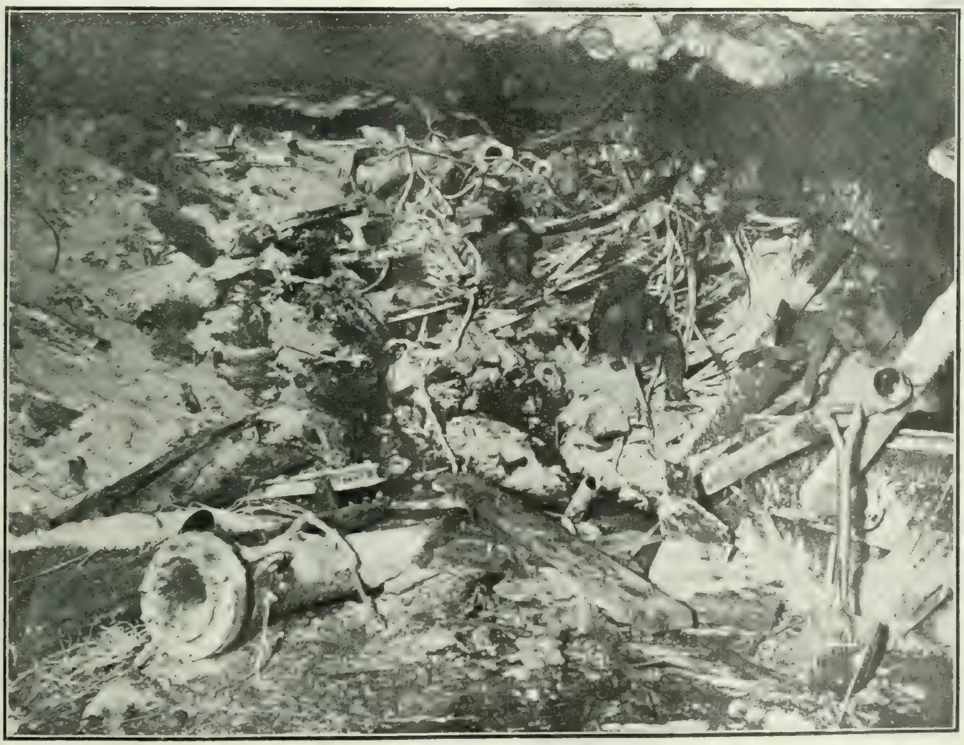
The two photographs reproduced herewith show the 17th level station at Block A, Randfontein, both before and after the recent big accident there, when a considerable portion of the shaft collapsed and several natives were killed. The photographs have been taken by Mr. R. Neilson, and the second photograph exhibits in striking manner the twisting of pipe columns and timber, etc., and the general chaos resulting from the collapse of immense tonnages of ground. This illustration will enable readers to appreciate the immense difficulties under which the rescue parties had to work.

Mining Questions in the Union Assembly.

Some questions of mining and engineering interest were answered in the Assembly this week. It was elicited that the site of the Durban grain elevator was not to be abandoned, and another big effort to complete the work, departmentally, had been decided upon. The Messina mine is apparantly not going to be left free of the attention of the Labour people, and the Minister of Mines gave a promise that the Inspector of his Department would descend upon the property at an early date, and see that all was in order. There must be times when the Messina management wish that the mine were the other side of the Limpopo - in Rhodesia.



Seventeenth Level Station, Block A, Randfontein, before the Accident.



The same Station after the Accident.

Government and the Blue Asbestos Industry.

By a Special Correspondent.

[illegible] of blue asbestos [illegible] is at present carried on in the Prieska, Hay and Kuruman districts of the Cape. Very little is heard of it outside [illegible] and it is difficult to obtain any exact figures as to capital invested, number of employees and so on. The Government returns show that from 1916 to 1920 something like 4,000 tons were raised [illegible] per annum, of a value of about [illegible]. The largest [illegible] company, the Cape Asbestos Company, Ltd., at present employs 15 white men and 300 native [illegible], and this is the worst period of depression the asbestos industry has probably ever experienced. These figures are only given to show that asbestos mining in the Cape is an asset of some value to the country. Unlike many other South African ventures, it has never appealed to the Government for assistance, yet in spite of its uncomplaining attitude, or perhaps because of it, this period of deep depression is chosen by the official authorities to impose new demands on it.

The Location Act was one of the last Acts passed by the old Cape Legislature in 1909, and as far as one can gather has been, to a great extent, a dead letter. After lying dormant for some thirteen years, the Act was proclaimed in 1922 over all the asbestos mines in the Hay district, and this year it has been extended to the Prieska division also. The main thing about the Act is that every adult male native has to pay ten shillings per annum to the Government, and one imagines that this is the real reason for putting the Act in force. The amount of revenue thus to be obtained is a trifling matter, yet it imposes a serious burden on the native worker, who is none too well paid at the best of times. Failing the native, the authorities, of course, come down on the mine owner for the money, and, in addition, the owner has to keep a register of all adult natives in the location and be responsible for their good behaviour. Coming on the top of all his business troubles, the enforcement of the Location Act will mean the partial or entire closing down of many of the workings. There have been rumours that the Government intended to levy an export tax on asbestos; if that turned out to be true it would, in vulgar parlance, put the "tin hat" on the whole industry.

The asbestos mine-owners might take a leaf out of the boot and shoe manufacturers' book, and present a united front to such enactments during bad times. The Boot and Shoe Manufacturers' Association have moved heaven and earth—otherwise Parliament and the Press—to such good effect that they appear to have reaped substantial benefits for themselves. The boot and shoe industry is not so very much more important than the blue asbestos industry, either in capital invested or in number of employees; if the asbestos owners agreed upon joint and firm action in this and other matters, they could probably protect themselves from vexatious impositions, and materially improve their prospects.

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Pretoria Royal Mint Regulations.

DEPOSITS OF OVER 50 OUNCES—LIST OF CHARGES—CERTIFICATES PROVIDED.

The following regulations governing the deposit of gold bullion at the Royal Mint, Pretoria, are gazetted this week:

Deposits containing not less than fifty ounces troy of standard gold may be brought to the mint daily, Saturdays, Sundays, and public holidays excepted, between the hours of 10 a.m. and 3 p.m.

All deposits will be dealt with in the order in which they are received. In order to prevent unnecessary delay and inconvenience persons intending to deposit gold in the mint will be required, where the bullion is in the form of bars, to forward to the deputy-master a statement of the weight, mark, and assay report of each bar, and the name of the assayer, together with directions as to whether the mint is to assay and coin them, or to melt, assay, and mark them with the mint stamp. Should the deposit be in fine gold in any other form than bars, an *additional* charge for melting prior to assaying and coining will be payable as mentioned in paragraph 8 (b).

Gold Bullion Deposited for Assaying and Coining.

The contents of each deposit shall be determined by the report of the Mint Assay Department and such reports shall be final. Decimal assay reports shall be made to the 1/10,000th part, *i.e.*, to four decimal places. The deputy-master of the mint may refuse any deposit which he may deem unsuitable for coinage, or he may, in consideration of the payment by the depositor of the *additional* charges mentioned in paragraph 8 (d) for refining the whole or any necessary portion of the deposit, assay and coin such bullion. Payment for gold bullion accepted for coining will be made in gold coin (with silver and bronze coin for the balance under one pound sterling where necessary) at the rate of £3 17s. 10½d. per ounce of standard gold contained in the deposit, based on the gold content as determined by assay. Subject to the absence of delay due to causes outside the control of the mint authorities and except in the case of a deposit requiring special treatment, the deputy-master will deliver out to the depositor or to his duly authorised agent, at the mint, gold coin, etc., of the proper value calculated as above not later than the fourteenth day after the receipt of the deposit.

Fine Gold Deposits to be Melted and Stamp Showing Mint Assay Affixed to the Resulting Bars.

The deputy master will receive for melting, assaying, and affixing of the mint stamp all deposits sent to the mint for this purpose at the charge mentioned in paragraph 8 (c). Bullion so deposited will be returned to the depositor in bars of approximately 100, 200, 400, or 500 ounces in weight, at his option. The delivery of these bars will be made to the depositor, or to his duly authorised agent, at the mint.

Mint Charges.

(a) For assaying and coining, charge fixed by Article 5 (1) of the Pretoria Mint Proclamation, 1922, viz.:—For amounts up to and including 500 oz., 1½d. per oz. standard. For amounts exceeding 500 oz., 1d. per oz. standard. (b) For melting, as mentioned in paragraph 5 (2)—½d. per oz. standard. (c) For melting, assaying, and stamping with the mint stamp, at the following charges based on the weight of bullion before melting, viz.:—On the first 10,000 oz. charge to be 0·35d. per oz. On the next 90,000 oz. charge to be 0·30d. per oz. And thereafter, *i.e.*, for amounts exceeding 100,000 oz., charge to be 0·25d. per oz., subject to a minimum charge of £1 1s. Should bars of other weights be required the charge will be notified by the deputy-master on application by the depositor. No responsibility will be accepted for loss in melting. (d) Additional charges referred to in paragraph 5, in cases where it may be necessary to refine any of the bullion deposited, the actual charges incurred by the mint refining, etc., in order to make the bullion suitable for coinage. Note.—The charges under (b) and (c) will be subject to revision, after due notice, should it be found necessary. Mint charges may be paid to the deputy master in advance, or may be deducted from the value of the deposit.

Memorandum of Out-Turn.

As soon as possible after the receipt of a deposit a statement will be furnished to the depositor showing:—(1) in the case of deposits for assaying and coining:—(a) Gross weight of the deposit; (b) standard gold content of the deposit; (c) value of the deposit at £3 17s. 10½d. per oz. standard; and (d) mint charges; (2) in the case of deposits for melting, assaying and mint stamp:—(a) Gross weight of the deposit as received; (b) gross weights, marks, and number of bars after melting, assaying, and affixing of mint stamp; and (c) mint charges. Notification of the date when the out-turn will be ready for delivery at the mint will be conveyed to the depositor as soon as possible. During the last fourteen days of Sptember and March, the periods of stocktaking at the mint, the deputy-master may make special regulations governing the receipt and issue of gold bullion and coin.

Mining Men and Matters.

Dr. Leopold Reinecke, formerly on the staff of the Geological Survey of Canada, and recently with the Sinclair Oil Corporation in Angola, is commencing practice as a consulting geologist in Johannesburg, Transvaal. Office at 14, Sauer's Buildings. Address, P.O. Box 2682. Cables, "Lekeenier."

* * *

Dr. L. Heymann, the well-known analytical chemist, who for some years past has been practising his profession in Johannesburg, has now opened a laboratory at 18 Simmonds Street. This is equipped with every modern device, and is capable of carrying out all kinds of research work. We understand that at present Dr. Heymann is busily engaged on work for the Transvaal Coal Grading Committee. Dr. Heymann has had a large experience of coal and metalliferous mining in Siberia, where he spent some years during the war, and his interesting articles on mining in Siberia, which were published in this journal, have attracted world-wide attention.

* * *

The many friends he has made during his stay in Rhodesia will unite in wishing a hearty bon voyage to Capt. H. B. Jameson, says the *Bulawayo Chronicle*. He has been investigating conditions on the spot for the Transvaal and Rhodesia Estates and other companies of which he is a director. It it safe to say that such visits are in the best interests of all concerned, for personal contact can scarcely fail to yield information of a character that can never be gained by the most assiduous attendance at board meetings. This is especially the case when the companies concerned can send out a representative who has made himself so popular as Capt. Jameson has done during the last few months.

The April Gold Output.

DAILY RATE OF PRODUCTION HIGHER—BUT DECREASE ON MARCH OF 18.000 OUNCES—GEDULD. SIMMER, BRAKPAN AND MODDER B EXHIBIT SUBSTANTIAL INCREASES.

With only 25 working days the Gold output of the Witwatersrand was nearly 21,000 ozs. less than in March. The daily average output last month (29,746 ounces) was, however, better than that of March. In regard to value, the decreased total output accounts for this, the realisable price of gold remaining at 87s. 6d., the figure at which it has stood firm for many months.

It will be seen that of the Witwatersrand mines only eight show an increased total output—Geduld, with 805 ounces more than in March, Simmer and Jack, 631 ounces to the good, Brakpan 618, Modder B 432, while the other four show very small increases. In the outside districts, however, the improvement is more general, miscellaneous producers showing with 2,277 additional ounces, T.G.M.E. 546 and Sub Nigel 266.

Crown Mines shows the most substantial decrease—2,626 ounces, the tonnage crushed in April being 212,000 tons as compared with 221,000 tons in March. Despite this decrease this mine easily takes the lead in the total output, Government Areas following with a total well above 60,000 ounces and New Modder with over 52,000, and Randfontein just below the 50,000 line. E.R.P.M. has again fallen back, the output being 1,586 ounces below the March figure, which had shown an improvement of 1,779 upon the February figure.

Total output for April	743,651oz.
Decrease on March	17,935oz.
Witwatersrand output	723,366oz.
Decrease on March	20,945oz.
Outside districts output	20,285oz.
Increase on March .	3,010oz.
April value	£3,253,473
Decrease on March .	£78,466

Individual Returns.

	Oz.	Inc.	Dec.
Aurora West	3,477	—	6
City Deep	38,158	—	1,617
Con. Main Reef	17,314		1,891
Ferreira Deep	9,016	—	253
Geldenhuis Deep .	13,876	—	105
Luipaardsvlei	4,280	—	155
Meyer and Charlton	8,445	—	103
Modder B	32,702	432	—
Modder Deep	22,479	—	829
Modder East	11,178		1,030
New Goch	4,235	—	87
New Kleinfontein .	10,538	—	519
New Modder	52,316	—	1,013
Nourse	14,415	—	794
Robinson	3,461	—	1,019
Robinson Deep	23,411	—	6
Rose Deep	13,933	3	—
Simmer and Jack . .	11,455	631	—
Springs	23,568	—	895
Van Ryn Estates	9,130	—	14
Village Deep	16,671	—	1,158
West Rand Con.	9,596	—	342
Wit. Deep .	12,479		1,131
Wolhuter .	8,138		82
E.R.P.M.	30,708	—	1,586
Crown Mines	67,199	—	2,626
Geduld . .	18,587	805	—
Con. Langlaagte	12,365	—	638
Durban Deep ...	11,397	41	—
Govt. Areas	60,750	—	963
Langlaagte Estate	17,064	23	—
Knight Central . .	6,955		380
New Primrose	4,404	—	446
New Unified	2,429	—	93
Van Ryn Deep . .	26,087	—	843
Brakpan	25,055	618	—
Randfontein	49,437	37	—
Witwatersrand . .	11,519		536
Miscellaneous	2,139	—	2,075

Outside Districts.

	Oz.	Inc.	Dec.
Sub Nigel . .	5,658	266	—
Glynn's Lydenburg . .	1,112	-	79
T.G.M.E.	5,673	546	—
Miscellaneous	7,542	2,277	—

Native Labour.

The Witwatersrand Native Labour Association report the number of natives employed as follows:

	April.	March.
On gold mines	178,337	181,573
On coal mines	15,040	14,710
Diamond mines . . .	1,860	1,273
Totals	195,237	197,456

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining/Rand Mines group for the month of April, 1923:—

Company.	Tons Crushed.	Yield in Fine Gold Oz.	Estimated Value.	Estimated Profit.	Estimated Working Cost per ton.
City Deep . .	93,000	38,158	£162,172	£53,287	23 5
Con. Main Rf.	50,700	17,314	73,586	6,612	26 1
Crown Mines .	212,000	67,199	285,599	72,950	20 0
Dur. Rood. Dp.	33,000	11,397	48,279	6,644	25 2
E.R.P.M.	133,000	30,708	130,511	*3,071	20/ 1
Ferreira Deep .	32,600	9,016	38,315	5,264	20 3
Geldenhuis Dp	55,140	13,876	58,840	2,006	20 7
Knight Central	32,700	6,955	29,532	3,782	15/ 9
Modder B	64,000	32,702	139,430	71,623	20 3
Modder East...	26,100	11,178	47,363	14,027	25/ 6
New Modder .	110,000	52,316	222,216	131,921	16 5
Nourse Mines .	48,300	14,415	61,266	6,259	22 9
Robinson ...	14,700	3,461	14,711	3,007	15 11
Rose Deep ...	55,400	13,933	59,215	13,071	16/ 7
Wolhuter	33,600	8,138	34,588	3,922	18 3
Village Deep .	55,500	16,671	70,852	7,638	22 9
Tls. & avgs.	1,049,740	347,437	1,476,475	401,972	20 5

*Loss.

Consolidated Main Reef Mines and Estates, Ltd.—Decreased profit due to decline in yield.

Robinson Gold Mining Company, Ltd.—Decreased profit due to lower tonnage and yield owing to discontinuance of mining No. 2 shaft pillars in consequence of provisional interdict granted at instance Johannesburg Municipality—now removed.

General Note.—The valuation of gold has been taken at £4 5s. net per fine ounce.

DESIGNS —— DRAWINGS —— TRACINGS

Working Drawings made from clients' sketches and instructions; mechanical and structural work handled for inspection or supervision; drawings prepared for patent specification.
J. E. PARKER, M.I.Mech.E., M.A.I.M.E.,
'Phone 1760. Box 559, Pretoria.

April Output: Group Returns.

UNION CORPORATION GROUP.

Particulars of the operations of the companies of this group for the month of April, 1923:—

Company.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev.) Total
Geduld Proprietary	50,000	18,587	£81,744
Modder Deep	42,100	22,479	£97,800
Totals and averages	92,100	41,066	£179,544

Company.	COSTS. Total.	PROFIT. (including Sundry Rev.) per ton.	Total.
Geduld Proprietary	£50,084	20 0	£31,660
Modder Deep	£37,475	17 10	£60,325
Totals and averages	£87,559	19 0	£91,985

The above results are arrived at by valuing gold at 87s. 6d. per fine ounce.

Geduld.—The additional Reduction Plant was brought into operation on the 24th April; it is running satisfactorily.

NEW CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs for the month of April, 1923, of the undermentioned companies of the New Consolidated Gold Fields Group:—

Company.	Stamps Running.	Tube Mills Working.	Tons Crushed.	Gold Declared. Fine ozs.	Total Profit Declared, including Sundry Revenue.
Simmer and Jack ...	320	7	65,700	14,455	£3,016
Robinson Deep	180	10	70,000	23,411	33,934
Sub Nigel	30	2	8,800	5,658	6,067
Totals	530	19	144,500	43,524	£43,017

Gold in reserve:—Robinson Deep, 2,656 fine ounces; Sub Nigel, 1,880 fine ounces. Total, 4,536 fine ounces.

The revenue derived from gold for the month of April is calculated at the rate of £4 7s. 6d. per fine ounce, less estimated gold realisation and exchange charges of 2s. 6d., or a net figure of £4 5s. per fine ounce.

Simmer and Jack.—Results for April include 759 ozs. of fine gold recovered from tube mill plates, which have been replaced by corduroy tables.

ANGLO-AMERICAN GROUP.

The following are the results of operations for the month of April, 1923:—

	Tons milled	Working Costs per ton milled s.	d.	Value of Gold Declared £	Yield per ton s.	d.
Brakpan	60,500	21	11·0	105,342	34	9·9
Springs	49,000	22	10·8	99,393	40	6·8
Totals and averages	109,500	22	4·3	£204,735	37	4·7

	Working Profit based on standard value of Gold Total £	per ton s.	d.	Estimated Premium taking gold at £4/7/6 per fine oz. less Exchange on Remittances £	Total Estimated Profit £
Brakpan	39,033	12	10·8	987	40,020
Springs	43,289	17	8·0	836	44,125
Totals and averages	82,322	15	0·4	1,823	£84,145

GENERAL MINING AND FINANCE CORPORATION.

The April operations of the producing mines of this group were as follows:

Company.	Tons Crushed	Total Cost.	Cost per ton.	Total Revenue	Profit.
Aurora West .	12,850	£12,535	19·51	£14,541	£2,006
Meyer & Charlton	15,600	16,086	20·62	36,222	20,136
New Goch	17,200	16,742	19·47	18,110	1,369
Van Ryn Estate	31,980	31,082	19·44	39,098	8,016
West Rand Con.	35,500	38,443	21·66	41,461	3,017
	113,130	£114,888	20·31	£149,432	£34,544

In calculating the revenue, gold has been taken at a value of 87s. 6d. per fine ounce, less estimated realisation charges.

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of April, 1923:—

Mine.	Tons Crushed.	Revenue from Gold. £	Total Working Costs. £
Consolidated Langlaagte	45,000	54,096	41,389
Government G.M. Areas	142,500	265,779	126,380
Langlaagte Estate	51,700	74,653	54,604
New Primrose	19,600	19,267	17,907
New Unified	12,000	10,628	9,831
Randfontein Central .	186,000	216,287	181,740
Van Ryn Deep	56,500	114,132	59,603
Witwatersrand	45,550	50,393	41,238
Totals and average	558,850	805,235	535,692
March totals ...	559,150	820,370	552,272

Mine.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue £
Consolidated Langlaagte	19·728	10,047
Government G.M. Areas	17.737	140,180
Langlaagte Estate	21·123	20,360
New Primrose	18·272	1,516
New Unified	16·384	850
Randfontein Central	19·542	35,760
Van Ryn Deep .	21·098	55,363
Witwatersrand	18·107	10,615
Totals and average ..	19·171	£274,671
March totals	19·753	£272,952

NOTE.—The above results are arrived at by calculating the gold at £4 7s. 6d. per fine ounce.

TRANSVAAL GOLD MINING ESTATES.

The following are the particulars of the output for the month of April, 1923: Central Mines: Tons crushed, 11,200; yielding 3,933 fine ozs. Elandsdrift Mine: Tons crushed, 1,780; yielding, 975 fine ozs. Vaalhoek Mine: Tons crushed, 1,850; yielding, 765 fine ozs. Estimated value of month's output, £24,014. Estimated profit for the month, £1,319. Note: The gold output for the month is valued at £4 4s. 9d. per fine ounce net, after allowing for exchange and realisation charges.

Letters to the Editor.

THE GOLD STANDARD.

To the Editor, S.A. Mining and Engineering Journal.

Sir,—The depreciation of gold in terms of commodities is a prospect which naturally alarms South Africans. But it would seem rather absurd to base an economic theory upon the ephemeral conditions that obtain in one country of secondary importance. And therefore, [illegible] immediate interests of this country may demand the restoration of the gold standard here and everywhere else, we must not expect [illegible] our own wishes to have much influence upon the world at large.

The Gold Producers' Committee suggests: "It would be fitting for the Union Government to represent to the Imperial Government the dangers from the point of view of the mining industry, and therefore South Africa and of the capital invested in South Africa, of the continued use of inconvertible paper currency by the United Kingdom, and to the corresponding advantage to those interests of a return to a gold basis by Great Britain at the earliest practicable date." No doubt the Union Government will act upon this recommendation, but it will carry little weight unless supported by a plan for carrying it into effect—a most difficult achievement. For not only is Great Britain under obligation to export £30,000,000 of gold to the United States annually, but the price level of commodities in Britain is still about 80 per cent. higher than in 1914. Consequently, other things being equal, the volume of her currency must be larger than at pre-war time by a similar proportion. It would seem then that, preparatory to a return to the gold basis, Britain would have to deflate her currency to a degree which, as Mr. McKenna pointed out, would so diminish the national revenue that an income tax of 10s. in the £ would be required to meet the interest on the national debt alone. Is it reasonable to expect British statesmen to face the results of such a policy?

Apart, however, from the impractical nature of the Gold Producers' suggestion, it is clear that equipped with evidence supplied by the economic reactions of the war, the confidence of mankind in the supposed blessings conferred by the gold basis has sensibly diminished. So many people are now asking why our ability to acquire and consume commodities in general should be determined by the available supply of one commodity—gold. And "orthodox" economists, like Mr. Hirst, Mr. Hartley Withers, Professor Marshall and the others, do not answer that question. It is demonstrated that a nation cannot function on a gold basis in war time, and it is obvious that at no time can the position be satisfactory under a system which makes the effective demand for (and therefore output of) commodities, from nail-polish and nose-powder to bridges and battleships, dependent upon the preservation of a certain ratio between the supply of currency and bank credit and the amount of the gold reserves.

The gold basis system, of which a familiar illustration is a triangle standing upon a golden apex that supports an inverted base of credit and commodities, exhibits the absurdity of the thing. And it becomes increasingly difficult to persuade people that such an edifice can be a reliable foundation of industry which expands and contracts in response to the arbitrary requirements of a currency law binding production down to a procrustean bed of gold.

The normal man, struggling with adversity during this epoch of abnormal stupidity, attributes the bad times to want of enough cash, and refuses to be convinced that the continual growth of productive power should not proceed *pari passu* with a corresponding growth of buying power. He becomes irritated when he reads in the "Westminster" or other Gazette that "Government must seriously consider means to limit the population, because two men can do the work for which three were required before the war." "Science marches on," he says to himself, "so what will happen when one man can do the work now accomplished by ten? Am I to assume that a population must diminish as it augments the means to produce commodities for its support?" If the argument moves into a discussion of the credit and currency problem, the gold standard economist waves a hand towards a Russia no longer holy to indicate the awful results of unregulated "paper." But the normal man, though baffled, is not convinced. Soon, unless our civilisation is to perish, he will recapture the idea of a just price—the *Justum Pretium* of the Middle Ages and, bringing that moral conception into line with present conditions, will devise a formula to regulate the price of commodities by capacity to produce them, to base financial credit on real credit, buying power upon productive power; a scheme, that is, for issuing credit instruments against goods *in posse* for the acquisition of goods *in esse*.

To accomplish this two things might be done. Buying power could be increased and prices held down (as partially happened during the war) until demand was approximately equated with supply or, much better, as Major Douglas has shown without any serious attempt at refutation, ultimate commodities should be sold at a price which is the same fraction of cost as total national consumption is of total national production. For there are two kinds of production: that of commodities which are immediately consumed, such as domestic coal and boot leather, and, say, of industrial coal and pinion wheels; the latter type being instruments to the creation of further commodities. And the Douglas price formula, which is gaining wider approval and has now been accepted by "Capel Court," the organ of the London Stock Exchange Guild, is founded upon the ascertained fact that consumption, which is chiefly of ultimate commodities, is much less than production which includes that represented by development, or ultimate and intermediate commodities in sight. This being so, it is reasonable to assume that price should be less than what is called cost, seeing that this "cost" includes that of producing plant and machinery in which are inherent new commodities of more value than those consumed in its production.

No doubt it sounds complicated, but surely it is less repugnant to the intelligence than the assertions, implicit in the present system, that our buying power must be curtailed by the supply of one rare and not very useful metal, that we may not have more petroleum or cotton which we need and can produce, because the amount of gold available is so very limited.—Yours, etc.,

R. G. BARKER.

[Our correspondent's *résumé* of the attractive Douglas Scheme for solving the world's currency problems is most interesting, but does not make it any the more desirable, from the purely South African point of view, that the arguments of the Gold Producers' Committee should be successfully controverted.—Ed.]

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The Week in the Sharemarket.

QUIET AND FEATURELESS—GOOD MONTHLY AND QUARTERLY REPORTS—DIAMONDS DULL—"STEELS" MAY BECOME AN ACTIVE COUNTER?

Throughout the week the market has been lifeless. The returns from the mines for April, which on the whole were satisfactory, failed to stimulate prices. Business has been meagre and representative of no tendency either up or down. Anglo-American stocks have been only notable for some activity in West Springs, which rallied on reports of exceedingly good development. The buying, however, did not appear to be strongly supported. Corner House stocks have been featureless, except in the case of Crown Mines, which have been sold and seem to have suffered an unreasonable drop. Nothing has been disclosed to warrant the decline; indeed things are said to be going well at the mine. Randfonteins of the Barnato shares have sagged. Robinson Deep disclose a very high percentage of payability in their quarterly report. There seems also to be some hope for Simmer and Jacks. Nothing else calls for any special comment. There is littlie to report as the result of a very dull week's business. Diamonds have suffered with the gold shares and from lack of interest have declined in price. It is said that Crown Diamonds may be producing this month. Tin shares had no feature. If anything they are lower, especially Zaaiplaats, from which property more news is awaited. There was very little business in Loans or Investment stocks. All sorts of reasons have been advanced to explain the lethargy of the market. It is evident that support has been withheld, but it is also evident that many shares are being picked up at the decline. News of the country's attitude regarding the currency question is eagerly awaited, and the consequent reflection on exchange rates is of the greatest interest to the market. The movement to combine our steel interests was a pleasing feature among Industrials.

	Fri. 4th.	Sat. 5th.	Mon. 7th.	Tues. 8th.	Wed. 9th.
Anglo American Corp.	24 7*	25 0	24 9*	24 9	24 9
Apex Mines	6 0*	6 0*	6 0*		6 6*
Aurora Wests	—	—	—	5 6*	—
Brakpan Mines	68 6*	67 9	68 0	67 6	68 6†
Brick and Potteries	3 0*	—			3 0*
Bushveld Tins ...	0 3*	0 3*	0 3*	0 4*	0 3*
Cinderella Cons.	—	—	—	—	3 6†
City and Suburban	2 9*	2 11	2 11	—	
City Deeps	52 6	51 6*	51 0*	51 0*	51 0*
Clydesdale Collieries	17 3†	17 3†	—		17 3†
Con. Diamonds	23 10½	24 0	23 9	23 9	23 6*
Con. Investments	—	29 0*		—	—
Con. Langlaagtes	13 3*	13 0*	13 9	13 3	—
Con. Main Reefs	9 3	9 6	9 4½	9 3*	9 4½
Coronation Collieries	25 0*	25 6*	25 6*	26 6*	25 0*
Coronation Freeholds	0 6*		0 6*	0 6	—
Coronation Syndicates	6 11†	5 6	5 10	5 6	5 8*
Crown Diamonds	6 8	6 5*	6 4	6 3	6 5*
Crown Mines	52 6*	52 3*	52 3	51 6	51 0
Daggafontein Mines	3 2*	3 2	3 0*	3 1*	3 1*
Durban Rood. Deeps	16 6*	16 3*	16 3*	16 3*	16 3
East Rand Coals	1 4*	1 4	1 6†		1 6†
East Rand Deeps ..	—	0 8*	0 10†	—	0 7*
East Rand Minings	10 0†	10 0†	10 0†	10 0†	10 0†
East Rand Props.	5 6	5 3*	5 3	5 3*	5 3*
Eastern Golds ...	—	—		0 6	0 6*
Ferreira Deeps	7 6†	—	—	7 6†	7 6†
Frank Smiths Diamonds ...	3 6*	3 6*	3 9*	4 0†	3 7
Geduld Props. ...	64 0	63 6*	63 9	63 3*	63 6
Glynn's Lydenburgs	14 3*	—	14 0*	13 9*	13 9*
Government Areas	109 6	109 0	109 0	109 6	109 3*
Hume Pipes	9 0*		9 0*	9 6	—
Knight Centrals	5 6*	5 7*	5 6*	5 8*	5 9
Lace Props.	—	8 6*	—		8 0*
Langlaagte Estate ...	20 0*	20 3†	19 9*	19 9*	19 6*
Leeuwpoort Tins	3 3	2 10*	2 6*	2 6*	2 8*
Luipaardsvlei Estates	—	5 0†	5 0†	5 0†	4 6*
Meyer and Charltons	—	—	68 0*		
Middelvlei Estates	1 0*	1 0*	1 0*	1 1*	1 0*
Modder B.'s	24 6*	24 6*	24 6*	24 3	24 6
Modder Deeps	43 10½	43 6*	44 0	43 9	43 9
Modder Easts ...	6 6*	6 6*	6 6*	6 6	6 5*
Natal Navigation Col. ...	26 0*	26 3*	26 6*	—	—
New Eland Diamonds	45 6	45 0	42 6*	47 6†	—

	Fri. 4th.	Sat. 5th.	Mon. 7th.	Tues. 8th.	Wed 9th.
New Era Cons.	—		—	—	6 7
New Geduld Deeps	—		0 10*		—
New Kleinfonteins	4 9	4 9	4 6*	4 6*	4 0
New Modderfonteins	79 0	78 9	78 6	78 9*	78 3
New State Areas	36 3	36 3*	36 6*	36 6	36 9
Nigels	—			9 3†	9 3*
Nourse Mines	14 3*	14 4	14 4*	14 3	14 4
Pretoria Cement	42 6	42 6*	42 6*	42 6*	42 6
Princess Estates			26 9*		—
Rand Nucleus	0 10*	—	0 10*	0 10*	0 11*
Randfontein Central .	15 0†	15 0†	—	14 6†	
Randfontein Estates	21 0*	20 10	—	20 6	20 6
Rouxville Diamonds	1 0*	1 0*	1 0*	1 2	1 0*
Roberts Victors		8 0†	8 0†	8 0†	
Robinson Deep A	34 0*	34 0*	34 0	33 9*	34 3
Robinson Deep B	11 9*	11 3*	11 6	11 3*	11 3
Rooibergs	—	3 9	3 6*	3 6	
Shebas	3 9*	3 0*	3 0*	3 0*	3 0*
Simmer and Jacks	3 0	3 1	3 1	3 1	3 1
S.A. Breweries		31 0*	31 6		31 6*
S.A. Lands	5 6*	—	5 5	5 9†	5 3*
S.A. Reserve Bank	£138†	£136	£1[illegible]	£137†	£136
Springs Mines	19 0*	18 6*	18 3*	18 3*	18 0*
Sub Nigels	10 0†	9 4*	9 3*	9 3	9 6*
S.A. Alkali	14 1*	14 6*		14 6*	14 6
S.A. Townships	11 6*	11 3	11 3*	11 6*	11 6
Transvaal Land	16 6	16 9*	15 0†	—	
Transvaal G.M. Estates	8 0*		8 3*	8 1*	8 0*
Transvaal Silvers	16 9	16 3*	16 7	16 7	16 6*
Union 5 per cent.	£102*	£102*	£102*	£102	£102*
Van Dyk	1 6†	1 6†	1 6†	—	1 6†
Van Ryn Deeps	68 0	68 0	67 9*	67 6	
Van Ryn Estates			—		16 0*
Village Deeps	12 0*	12 6*	12 9	12 6	12 6*
West Springs	19 7½	19 6	19 7½	20 0	19 6
West Rand Cons.	7 6†	5 0*			
Western Rand Estates	3 3*	3 6†	3 0	3 0*	
Witbank Collieries	29 0	28 6*	29 6		28 9*
Witwatersrands		15 0*		15 6*	
Witwatersrand Deeps	16 3*	16 0*	16 0*	16 0	
Zaaiplaats Tins	6 3	5 9*	5 6	5 7	5 6

* Buyers. † Sellers

Petrol and Paper Duties.

The course of the debate in the Union Assembly on the new duties was marked by interesting discussions on petrol and paper duties. On the proposed increase of a penny per gallon on imported petrol when packed in tins and drums, Mr. Munnik made the interesting suggestion that a rebate of the duty should be given as a bounty to South African firms which blended petrol with locally produced alcohol for the purposes of power alcohol. Mr. Burton was quite sympathetic to this amendment, but pointed out that the Board of Trade had considered such a scheme, but had decided to defer any recommendation for another year or two, as South African industry in the manufacture of alcohol is not yet ready. Several members urged the acceptance of Mr. Munnik's amendment on the ground that it could do no harm, and eventually Mr. Burton agreed to consult the Board and to give every consideration to an amendment on the Tariff Bill if Mr. Munnik likes to introduce it then, and with this the hon. member was satisfied. A lively altercation between Mr. Boydell and the Minister occurred on the question of specially taxing motor spirit imported in drums. It seems that the Shell Oil Company is erecting tanks at Durban, but the Texas and the Vacuum Oil Companies are against the scheme of encouraging the introduction of oil in bulk. However the Shell imports about 50 per cent. of the total South African consumption and Mr. Burton believes that the other companies will follow their example. The proposed increases in the duties on brown paper and similar classes of paper drew a strong protest from Mr. Pearce, who secured the information from the Minister that the raw materials of the Rand factory are imported, though the company hopes soon to use wood pulp and grasses from North Natal and elsewhere.

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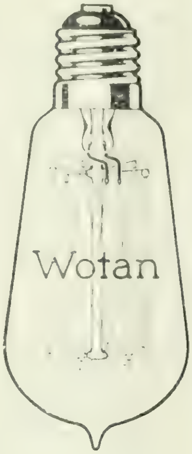

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TOPICS OF THE WEEK.

The Sad Story of the Knight Central.

It was difficult for Mr. Raleigh, the chairman, to say anything very new at the meeting of the Knight Central this week at which voluntary liquidation was decided upon. We are constantly hearing of the greedy mineowners sacrificing everything to their lust for gain, but in the case of the Knight Central the boot would seem to be on the other foot. Mr. Raleigh mentioned that the reason the Knight Central was in existence to-day was because of the firm stand taken against shareholders' recommendations five years ago that the company should be wound up. He said he had realised the responsibilities the company had to the community, its employes, and the State, and had endeavoured to keep the mine going as long as it could earn profits; and he had stated from that chair—not once, but many times—that it was a duty they owed the community that as long as they could make any profit they should carry on. But might not the shareholders reasonably retort that had the company gone into liquidation five years ago their assets would have realised a great deal more than to-day? The market for second-hand plant which must govern the sum realised by the sale of the splendid 120-stamp plant has, for instance, changed to their disadvantage in the interval. Mr. Raleigh, of course, did not fail to draw the moral himself and his words can hardly be improved upon. He showed that after over a quarter of a century of active operations shareholders will lose more than half the original working capital subscribed, and during this time they have received no interest whatever on their investment. During the time the company has been in existence it has spent :—On capital expenditure, £1,095,400; on working costs, £4,405,500; on taxes, £17,800. Total, £5,518,700; On ex-enemy shares, £9,100; Total expenditure, £5,527,800 the greater portion of which has been expended in the district on wages and for plant, stores and materials. Mr. Raleigh declared "Whilst the distribution of money that has resulted from the working of the property, amounting to £5,518,700, has been an important factor in the life of the district community, to shareholders it has produced a dismal result. The risks of investing in mining properties demand that a higher rate of remuneration should be forthcoming than in the case of ordinary commercial undertakings. This is well instanced in the case of this company as you can judge by the results I have regretfully had to put before you to-day." There is certainly no undue emphasis here, and the Knight Central chairman evidently believes that repeated iteration confirmed by an impartial State commission of inquiry should convince the Government, labour and the general community of their entire good faith. The unfortunate shareholder is the only factor in the situation whom nobody attempts to mollify.

Wages of Mine Workers.

At Tuesday's sitting of the Board of Conciliation, Mr. A. J. Limebeer, of the Chamber of Mines statistical department, handed in the following schedule, which shows that the average wages of all day's pay employees on the mines had increased by 11%, as compared with 1914, but that in the case of the higher paid men, such as winding engine drivers, contractors and mechanics, the increase was naturally less in proportion, being only 4 per cent. The figures were taken from the Government Mining Engineer's return.

	Earnings per shift (excluding overtime). June, 1914.	October, 1922.	Percentage increase.
European employees.			
*All day's pay men (including men on contract, winding, engine drivers and mechanics)	19 4	21 7	11·6
*Men on contract ...	29 9	31 1	4·5
*Wndng. engine drivers	21 8	22 5	3·5
*Mechanics	20 1	20 9	3·3
†Natives	1 11·9	2 2·8	12·1

*Full rate men, excluding officials.
†Chamber's figures.

In reply to Mr. Gemmill, Mr. Walton, manager of the Crown Mines, stated that the average yield on the capital expended by the Crown Mines was not more than 4 per cent., and on the whole Rand the yield would probably not be more than 6 per cent. This, he believed, was quite inadequate for a gold mining proposition, and he agreed with Mr. Gemmill's suggestion that it was obvious capital was obtaining too small a portion of the product of the gold mining industry and European labour too high a share.

Further figures put in by Mr. Limebeer showed that the rate of expenditure in March of this year on salaries, wages and stores, disclosed, it sustained, an increase of two and a half millions over 1914.

EXPENDITURE ON SALARIES, WAGES AND STORES, WITWATERSRAND GOLD MINES.

European salaries and wages	£6,854,032	£566,263
Native and coloured wages	5,085,772	*563,000
Stores ...	9,808,480	*900,000
	£21,748,284	†

*Chamber's figures.
†At the rate of £21,348,000 per annum.

The Globe and Phoenix.

A highly encouraging report was laid before the shareholders of the Globe and Phoenix G.M. Co., Ltd., at the annual meeting held in London the other day. The Chairman, Mr. F. A. [illegible], began by stating that during the year "the position of development marks a new era in the history of the mine." A year or two ago the position was considered serious. The ore reserves were dwindling rapidly, and the mill was overtaking the mine. The Board accordingly decided to search for new bodies of ore and to engage in more extensive development than had hitherto been attempted. In pursuance thereof it was resolved that a substantial fund should be built up for development, and an amount of £100,000 was accordingly accumulated. Mr. D. P. McDonald, the geological adviser, then laid out a programme of development which was immediately put in hand, and, it may be said at once, was attended by entirely satisfactory results. Having described recent developments in detail, the Chairman summed up by saying, I think you will all agree that the policy of the Board in setting aside the special development reserve fund has been amply justified, indeed, I may almost say has saved the situation. I say this more confidently having regard to the fact that the ore reserves at the end of last year show an improvement both in tonnage and value. Our advisers are of opinion that the prospects of the mine are much more promising than has been the case for some years past, and your directors believe in their opinions. Mr. McDonald has expressed the opinion that, by following down on the footwall leader, payable reef will be found again below the 21st level in the south section of the mine. I need not say that we sincerely hope that this will be the case, and if so the prospects of the Globe and Phoenix will be greatly improved."

The directors were able to declare the interim dividend of 1s. 6d. per share just recently announced out of the balance brought forward and the profits already earned and obtained this year, and without touching in any way the funds set aside for the special development of the mine.

The Balance of Trade.

A very interesting statement was recently prepared for the Select Committee on Public Accounts by Mr. E. H. Farrer, Secretary for Finance, showing the balance of trade for 1922. It was as follows:—

	Millions.
*Imports of merchandise	51½
Balance of exports	13½
	65
*Freight and insurance on imported goods	4
Money spent by Union Nationals abroad	4 net
Interest and dividends, profits, etc., remitted abroad	16 net
Money invested abroad	—
Total	24
Exports of merchandise, bunker coal and ships' stores	65
Balance of exports	13½
Money spent by foreign Nationals in Union	
Interest and dividends on money invested abroad	—
Money borrowed abroad, capital introduced by settlers, etc.	10 net
Total	23½
Adverse balance total trade	½

*Ascertained, remainder estimates.

Mr. Farrer, in giving evidence before the Select Committee on Public Accounts, said the statement was a rough estimate. "I have," he went on, "had to correct some of the figures."

Lord Leverhulme's Catchwords.

An inspiring plea for co-operation between employer and employed, was made by Lord Leverhulme in mid week in addressing a meeting at the Hotel Cecil. Robert Louis Stevenson had once stated, he remarked, that modern society subsisted on catchwords. In Lord Leverhulme's opinion the most dangerous catchwords at the present moment were "Labour" and "Capital." The use of these terms tended to make master and man regard each other as enemies, whereas the industrial future of the British Empire, he averred, depended upon all classes working together as partners. They had a wonderful Empire, with its resources and wealth scarcely scratched, he observed, and so far from the war debt being viewed as a burden, it should be regarded as a stimulus to greater effort in developing what they possessed. The greatest wealth, however, was not the millions of square miles within the Empire, but the millions of people who are square. In the past the development of British resources had been largely a question of the engineer and the chemist. In the future, he concluded, they should have to pay increasing regard to the human element. In a notable peroration which even an unaccountable lapse into a misreading of the V.F.P. "catchword" could not mar, Lord Leverhulme declared:—"Every now and again we got reports of untold sources of power that were running to waste in the British Empire. In our short lives there had been harnessed for the service of men the wonderful Niagara Falls, the Victoria Falls, and many other waters. Had we ever made any serious effort to harness for the service of the whole world the fine human hearts and minds and souls that composed the British race? We had not. We worked in our industries on lines that made no effort, no attempt to bring into the service of our common undertaking a man with his whole mind, his whole heart, and his whole soul. Those who had been permitted to do that, whether in the case of a single person who served them well and faithfully or a number, knew the enormous power that lay latent in the breasts of those who were willing and encouraged in service for their fellow men. The whole policy of ca'canny was not laziness. He was certain of that. It was the fear of unemployment. In trying to remedy unemployment by decreasing production we were increasing costs and closing markets against us all over the world." These words are not without their application to many on the Rand, as well as to British industry.

The Gold Producers and the Gold Basis.

The striking letter from the Chamber of Mines to the Chairman of the Public Accounts Committee has attracted much comment, both on the Rand and at the Coast, and has evoked some criticism in Parliamentary circles. A strong statement in support of Mr. Gemmill's arguments in the letter in question comes from America, and from one who may be described as a practical man. Writing on the subject in the *Year Book of the Engineering and Mining Journal of New York*, issued last January, Mr. Sydney J. Jennings, the well-known mining engineer and the vice-president of the United States Smelting, Refining and Mining Exploration Company, declared, in a notable passage: "If the decline in the production of gold continued for another 10 years at the rate that has obtained during the last ten years two things will probably happen: the value of commodities, as measured in gold, will decline greatly and a new and vigorous attempt will be made to change the standard of value from a gold basis. It, therefore, behoves the gold miner to search diligently for new supplies of ore and the gold user to be more economical."

Meanwhile, the London newspapers are drawing attention to a speech delivered in Chicago by Mr. F. C. Goodenough, chairman of Barclay's Bank, in which he emphasised the risk of gold depreciation in terms of commodities, owing to the enormous accumulation of gold in America, as a basis of credit. He uttered a warning that, unless the credit which could be created on America's enormous gold stocks was carefully regulated, a situation might arise which would constitute a grave danger to America and the world. He suggested that an agreement should be come to between America and Britain in regard to gold shipments from America, when the recovery of the sterling and the dollar exchange to slightly above parity should render withdrawals possible. Commenting on the speech, *The Times* points out that the value of gold in terms of commodities has already depreciated in America, where the Federal Reserve Board is drawing attention to the question of the regulation of credit. The withdrawal of gold from America would constitute a definite check on credit creation. The most practical and most valuable form of financial co-operation between Britain and America would be American assistance in financing the reconstruction of Europe, but until the reparation question has been settled full co-operation does not seem possible.

The only serious attempt at a reply to the Chamber's statement comes from Mr. D. C. Greig, who, in a long letter written from the coast, says, *inter alia* " Although the phraseology and expressions used are those of Mr. Hirst, I am morally certain that the letter has been written by my friend, Mr. Samuel Evans, whose views on the future value of gold seem to change, if not from day to day, at least from year to year. It was on the 21st of May, 1921, that Mr. Evans, in his speech at the Crown Mines meeting, made the amazing prophecy that, from that date onward, for an unknown period, gold would appreciate in value until the Crown Mines would work 3 dwt. rock at a profit. Now, apparently, Mr. Evans agrees with Mr. Hirst that gold for the last few years has depreciated, and will continue to depreciate in value until it falls 50 per cent. In other words, the chief adviser to the Chamber of Mines on economics is just as sure in 1923 about gold depreciating as he was about it appreciating in 1921. What has happened to alter his opinion? Nothing, so far as one can see, except that Mr. Hirst has been touring the country, preaching undiluted pessimism, and has succeeded in frightening the Chamber of Mines. What sane body would seriously suggest, as the Chamber does, that the British Government should abandon a policy which, if adopted, improves the taxpayers' position, simply because it would adversely affect the gold mining industry? It shows a lack of proportion. The capitalised value of the Rand a few years ago was only equal to that of one British railway, the L. and N.W. In any case the fantastic idea that Britain can manipulate the exchange so that she can obtain advantages from the depreciation in the dollar is not in accordance with the known policy of the Bank of England and the Federal Reserve Bank, which work together. The latter has deliberately raised its rate to check speculation in commodities and prevent depreciation of the dollar, but it may not succeed, as the Federal Reserve Bank has not the same control of the money market in America as the Bank of England has of the British. The last recommendation of all, that the Union Government should approach the Imperial Government and urge it, in the interest of the mining industry, to return to a gold basis at the earliest practicable date is, of its kind, a perfect jewel.

" The Chamber of Mines appears totally ignorant of the fact that it is already the policy of the Imperial Government to do so, that this was repeatedly stated at the Brussels Conference, the Genoa Conference, and in Parliament. That every British banker of standing has approved of that policy, and when Sir George Paish, at the Sound Currency Congress only the other day, proposed an immediate return to the gold basis, it was opposed and rejected by the great bankers and economists not as a matter of principle but on the grounds of expediency. The British bankers, who have done so well, are taking no risks, and will not endanger Great Britain's reputation for sound finance by returning prematurely to a gold standard basis until she has built up a gold reserve strong enough to face any position which might possibly arise. About seven months ago the Chancellor of the Exchequer, in reply to a question when Britain would return to a gold basis, stated that he could not tell, but when she did, it would still remain the patriotic duty of every British subject not to exercise his right and demand gold, which would be required to maintain the strength of the foreign exchanges."

It will be seen that even Mr. Greig admits that the Gold Producers, with the natural desire to protect their existence, merely ask for what " every British banker of standing has already approved of," so that their crime is not so very dreadful after all.

The Conciliation Board.

The Conciliation Board, appointed to take evidence in regard to the demand of the mine mechanics for a 30 per cent. increase in wages, of which Mr. J. Young is chairman, has continued to take evidence throughout the week and a great deal of data of a vitally important nature. The application for an increase in pay is being debated in reference to the Crown Mines, but the " demand " and the deliberations of the Commission are, of course, in respect of the Witwatersrand mines generally. At the resumption of the sitting on Tuesday afternoon the chairman stated that the figures handed in by Mr. Gemmill with regard to the number of mechanics employed on the mines in 1919 and 1922 had been submitted to Mr. Vaughan, the Acting Government Mining Engineer, who had confirmed their accuracy. Mr. George Brown then stated that it has been discovered that a mistake had been made in the figures they had put in, Mr. Crisp adding that the compiler had given the figures for 1921 instead of 1914. They therefore accepted Mr. Gemmill's correction. On Monday afternoon the Board decided to make a visit to the Crown Mines for the purpose of inspecting the carrying out of drill-sharpening, and this was done on Tuesday morning. Mr. Bertram Gray, chief engineer on the Crown Mines, gave evidence that he had been employed on this property since 1916, and had 21 years' experience of mining on the Witwatersrand, having previously been connected with the Robinson, the Robinson Central Deep and the Village Deep. He stated that on all mines the rate of pay for mechanics was the same, namely, 2s. 6d. an hour, although there were many mechanics who were receiving a higher rate of pay. In reply to Mr. Crisp, Mr. Gray stated that he had qualified himself for his present position by serving the usual apprenticeship of five years. He considered a good mechanic was a highly skilled man, and could be termed superior to an ordinary reduction worker. He denied Mr. Crisp's suggestion that the foremen on the mines had not time enough to see that the men under them properly carried out the work they had to do. They certainly had to depend to a very considerable extent on the efficiency of the mechanics, but they would be badly let down if they neglected at the same time to exercise proper supervision. On Tuesday afternoon the most important evidence was adduced by Mr. Arthur J. Walton, general manager, Crown Mines, Ltd. He was asked by Mr. W. Gemmill (representing the Chamber of Mines) what would be the result on working costs if the increase were applied to all European workers on the Crown Mines? Mr. Walton gave the increase as 1s. 4d. per ton, but added that it would further affect the position of the ore reserves, and throw out a considerable amount of ore which would have to be replaced; thus increasing the figure to 1s. 10d. per ton. The witness explained that it would knock out nine million tons; the remainder would be worked on the 1s. 10d. per ton increase. Mr. Gemmill inquired what would be the nett loss to the country in the spending power of the Crown Mines, allowing for the effects of this increased working cost. Mr. Walton estimated it at £4,300,000. There would also be a certain amount of additional loss through not working the nine million tons of rock. In any case, there would be a nett loss to the country of at least £5,000,000?—Undoubtedly. If the increase was also applied to the natives, the manager said, additional development work entailed would bring the sum to 3s. 5d. per ton as nett increase. The effect would be to reduce tonnage by 24 per cent., or approximately 14 million tons. The nett loss to the country thus represented would amount to £6,700,000, and some additional loss on account of the 14 million tons not worked.

The effect of the increase of wages to Europeans, therefore, would mean a loss to the country of five millions; and if applied to natives certainly over seven millions?—I should say so.

Asked how many Europeans and natives were employed on the Crown Mines, Mr. Walton said the average number of whites working in April, 1923, was 1,662, and the average number of natives 15,624. The total expenditure per month was in the neighbourhood of £220,000—approximately 21s. per ton. The witness was requested to give his view as to the probable effect of the increase of 30 per cent. on other mechanics; witness said that all the others would be after it at once—especially the natives, who were very dissatisfied. Whenever there was any agitation for increase of white wages, the native was always there as well. Mr. Gemmill: Can you imagine anything more serious than a native strike?—The witness replied that he could not. You are of the opinion that an increase of the European pay would inevitably be followed by a strong demand from the natives?—Unquestionably. "If the opportunity of making profits is reduced, the capitalist would be extraordinarily shy about putting capital in," was the reply given to a further question. Mr. Gemmill remarked that it was known that wages on the Rand were high. "If the impression got abroad that there was an agitation afoot and a tendency to increase wages," he asked, "it would be most unfortunate in regard to overseas opinion?" The witness said he thought it would. Mr. Martin (member of the Board) examined on the question of the Crown Mines' profits. Mr. Walton held that 2d. per ton (previously stated as the probable nett effect on working costs of the increase to mechanics only) was quite a serious item in nett profits.

You would be in favour of raising the European wage to the effective standard of 1914?—If it were economically sound.

You would favour increased wages if the mines could afford to pay them?—I have not actually gone thus far. (Laughter.)

Mr. Martin: If one could confine this matter entirely to the question of mechanics' wages, and eliminate fears of the effect of this—first, reopening a general situation, secondly, demands from other sections if the situation were re-opened—you are very much against it on its merits?—No, it is thoroughly a matter of principle and effects. To quite a few mechanics I would like to give more, and to quite a few I would like to give less. The witness admitted, after further pressure, that the fear of effect and counter-effect was the great argument against the increase of 30 per cent. in the mine mechanic's wage.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal will be leaving shortly for Rhodesia and Natal with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

Randfontein Law Suit.

The Transvaal Provincial Division of the Supreme Court at Pretoria on Wednesday, in effect, fixed Sir J. B. Robinson's liability to the Randfontein Estates at somewhere in the neighbourhood of £100,000 capital, on which interest at the rate of 6 per cent. per annum is chargeable since 1909. This would bring the total liability to approximately £170,000.

* * *

The Currency Debate.

In the debate in the House of Assembly on Wednesday, on the Currency Bill, the Minister of Finance said he agreed that it was extremely difficult to decide what was the best thing to do in the interest of the country, and all this difficulty was due to the disturbed condition of the world. If things were normal in the world, if the exchange were stabilised, then there would be a great deal more to be said; but at present nobody could say what would happen if we went back to gold parity to-day. He hesitated to take that step because of the possibilities which might result. There was only one thing certain, and that was that if we went back to the gold standard to-day the exporter would suffer. He felt that he would not do his duty if he advised the immediate return to the gold standard. After all South Africa was only a small country. The production of gold had nothing to do with it. It was not a question of production of a commodity, it was a question of currency. The people of South Africa to-day used about ten millions per year in paper currency, but if we were to use 10 millions of gold it would be a mere drop in the bucket of international finance. Probably if we went back to gold to-day the rest of the world would not know of it. It would have no effect on the position if we took the gold of the mines and minted it, because we would have to pay the mines the standard market price.

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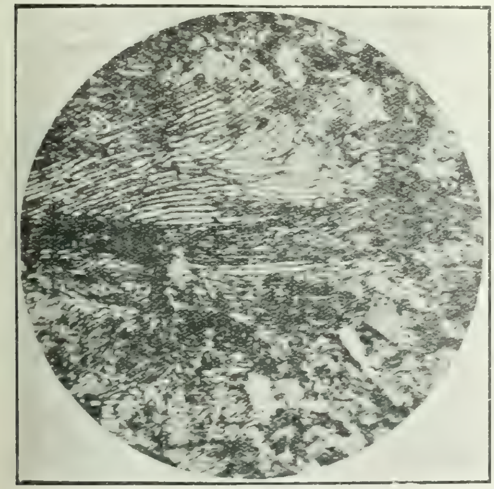
ENGINEERING SECTION.

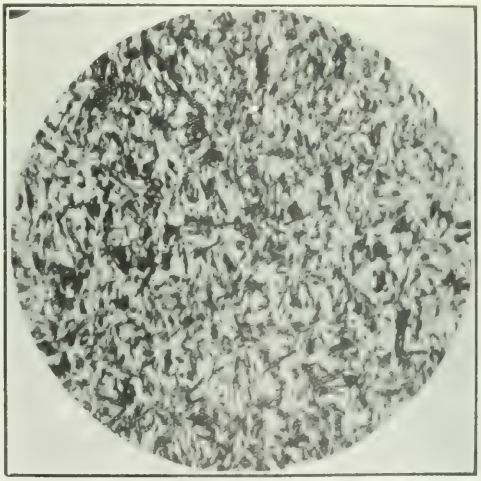
Mr. Brearley's Lectures on Steel.

THE SHEFFIELD EXPERT LEAVES FOR ENGLAND —HIS APPRECIATION OF RAND AUDIENCES.

The lectures delivered by Mr. Harry Brearley, the well-known steel expert, which we referred to briefly in our last issue, engaged the close attention of technical men from one end of the Reef to the other.



Annealed Carbon Steel. Pearlitic Structure × 1000.



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Mr. Brearley has now left Johannesburg and in the course of an interview with a "Star" representative stated: "I wish I could stay here six months." "the kindness of the people of Johannesburg and the Rand has been simply extraordinary; they have treated me as an old friend, and I have been tremendously impressed by their eagerness to learn all they could about the use of steel and how to deal with the difficulties that from time to time arise in connection with it." Mr Brearley's object was to study on the spot the exact requirements of the Rand. "The experiment has been abundantly justified," he has said. "I have tried to show how troubles arise and how by simple means users of steel can find out the source of the trouble and adopt simple remedies. I am not a salesman, and do not talk about any particular makes of steel, but how to make the most of whatever steel is bought. Neither have I dogmatised, I hope. I have sought to induce users of steel to take an interest in it for their own sake, to understand fundamental principles and to apply a few simple tests so as to form their own judgment of the rightness or wrongness of any particular material. The amount of interest that has been manifested has surprised me beyond measure. I have not had time to go down a mine, but have been among the smiths and other workers who have to actually use the steel, and they have been most attentive and anxious to learn anything I could tell them." Some of these men have journeyed considerable distances to hear Mr. Brearley and have said they would have travelled 200 miles for the purpose. One of the most interesting gatherings addressed by Mr. Brearley was at the Chamber of Mines on Tuesday of last week, when mine managers and engineers from all along the Reef filled the Council Chamber to its utmost capacity, and listened with the closest interest to Mr. Brearley's straight talk about the use and misuse of steel and afterwards bombarded him with questions. Mr Brearley has also been in the railway shops, where the charge hands and foremen were called together and followed with the keenest interest his practical talks and demonstrations. The visit of this expert has been in the nature of an innovation for Johannesburg and its success has abundantly justified it. One cannot doubt that its result will be found in further economies in the use of steel on the mines and in the shops.

TRANSVAAL SILVERS.

The output of this company for April totalled 420 long tons of lead bullion containing 42,755 ozs. of fine silver, representing a total value, based on the latest quotations for the metals, of approximately £16,238.

The Works of the Union Steel Corporation.

DESCRIPTION OF EXTENSION OF PLANT AND SOME OF THE PRODUCTS—BRIEF HISTORY OF THE ENTERPRISE.

At the invitation of the directors of the Union Steel Corporation, Limited, a visit was paid last week to the works of the Corporation at Vereeniging by members of the South African Institution of Engineers and their friends. The visitors were entertained to lunch by the directors of the Corporation, who were represented by Mr. T. Marks. On behalf of the Institution, the Acting President, Mr. R. Cralle, expressed appreciation for the instructive and enjoyable opportunity afforded by the visit to Vereeniging, and Mr. T. Marks replied on behalf of the Board. After lunch the visitors were enabled to experience the attractions of the now enlarged and wonderfully improved Vaal River, resultant possibly of the partial closing of the gates at the Water Board Barrage some eighteen miles down stream. In the informative paper read a few weeks ago before the S.A. Institution of Engineers by Mr. G. Robson, the Manager of the Works, we are indebted for the following extracts:—

Many are no doubt well acquainted with the early history of the endeavour to found an iron and steel industry in South Africa for the exploitation of the native ore bodies distributed throughout the country. The deposits were examined by experts and unfavourably reported upon from the point of view of the establishment of the industry on large scale. The Government thereupon decided to offer to public tender the large accumulation of scrap iron and steel lying at Pretoria and other railway depots, a condition of purchase being that the successful tenderer should erect a plant for the production of steel from scrap, and allocate a certain portion of profits made to experimental work on native ores, with the object of proving their suitability for the production of iron. A number of tenderers entered the field, and after lengthy negotiations the Union Steel Corporation was formed to take over the contract from the successful tenderer and carry out its terms. Thus the foundation of the Corporation's business was laid, and with it I may even venture to say the foundation of the Iron and Steel Industry in South Africa. The enterprise was one fraught with great risks and many difficulties, and demanded the greatest courage on the part of its promoters, most prominent amongst whom were Mr. Isaac Lewis, our present Chairman, and the late Senator Samuel Marks, who have done so much to foster industries in this country; and the late Mr. Isaac Butler, an ironmaster, recognised as one of the cleverest men in the iron and steel trade in Europe. Mr. Butler was for a time Managing Director, in which capacity his great experience proved invaluable to the Corporation. These gentlemen, undeterred by pessimistic reports, proceeded with characteristic energy to establish the works, to surmount the difficulties attendant thereon, and prove their faith in its ultimate success. It is interesting to note that the sons of these pioneers, Major Aubrey Butler, Messrs. Louis and Theodore Marks, and Mr. G. Roy Lewis, our Managing Director, are now taking a most active interest in the affairs of the Corporation, and in promoting its welfare.

The Works.

The construction of the works was commenced in the year 1912, and during the first year of operations, the number of employees was: White 84, native 166, making a total of 250; whilst to-day, the employees are 215 white and 585 natives, making 800 in all. The works, the total area of which is approximately 50 acres, are situated on the banks of the Vaal River, Vereeniging, and the sidings are connected to the main line; the railway station being about three-quarters of a mile distant. The large electric power station of the Victoria Falls and Transvaal Power Company, Limited, is situated within three to four hundred yards of the works, from which source the Corporation obtains the electric power necessary for the running of the whole plant. Adjacent to the steel works are the works of the Vereeniging Brick and Tile Company, Limited, by whom the fireclay, silica and magnesite bricks required for the steel furnaces are manufactured, whilst the coal necessary for the gas producing plants is supplied from the collieries of the Vereeniging Estates, Limited, which are situated in the district. The constant gratifying increase and extension of our business compelled us two years ago to face a very great enlargement of our manufacturing power, hence the building of a 25 ton Siemens Martin Furnace, together with its gas producing plant. This plant was designed by the writer, the whole of the necessary structural material being manufacturer and erected by the Corporation. In addition, a new 22in. finishing mill was decided upon and is now completed. The large extension of this mill will be noted, with its mechanical live roller conveyor, hot banks and banks for material awaiting straightening and finishing. Soaking pits for the re-heating of ingots were also laid won. We therefore possess a works and equipment—the first of its kind in South Africa, and unequalled in our line of business, which enables us to supply materials of the highest class at a price which compares favourably with that of the imported article. We have a large and efficient staff, all expert in their particular professions, with a wide and varied experience obtained in large works in England. The Corporation rose to the occasion during the great war in supplying South Africa with steel sections and steel castings which at that period it was impossible to import. From the commencement of the war to date, thousands of tons of steel have been supplied to the Railways, Harbours and Public Works Department. The contract, amounting to many thousands of tons, for the necessary structural material required in connection with the electrification of the Glencoe-Maritzburg line, is well in hand. The sections undertaken comprise: Tube mill bars; grizzley bars; rails: 16lb., 20lb., 25lb., 30lb., 35lb., and 45lb. per yard, and we are now in a position to roll rails 60lb. per yard. Fishplates to suit all sections of rails. Angles 1in. to 6in., tees and channels—all of usual standard thickness. Flats, rounds and squares. Steel castings up to 10 tons each, skip wheels and truck wheels of all kinds. The material for these sections is made in accordance with the British standard and Public Works Department specifications, or to customers' requirements.

Reinforcing Steel.

This brand is made to the requirements of the Public Works Department, and for grain elevators and many large Government buildings. The Corporation has supplied the reinforcing steel rods for nearly all the bridges constructed in Africa during the last seven years, and special mention is made of the following: Bridges, Parys, Buffalo River, Umgeni, etc. Grain Elevators, Durban, Kroonstad, Senekal, Rendezvous, Val, Frankfort, Standerton and Davel. Irrigation Schemes, Haartebeestpoort, Klaver, etc. A contract for the mines of the Witwatersrand for 10,000 tons of shoes, dies, rails, tube mill bars, and grizzley bars is now nearing completion.

GLYNN'S LYDENBURG: APRIL OUTPUT.

The following are the results of the operations of this company for the month of April, 1923: Tons milled, 4,010; yielding 1,412 fine ozs.; estimated value of month's output, £5,961; estimated profit for month, £649. Note.—The above figures are exclusive of expenditure for the month upon shaft sinking, special development and capital expenditure amounting to £2,414. The gold output for the month is valued at £4 4s. 9d. per fine oz. net, after allowing for exchange and realisation charges.

India-Rubber Manufacturers' Protest.

A Pointer for Local Industry.

Of interest to those who have followed the sturdy fight being put up by the young South African rubber manufacturing industry is the fact that the India-Rubber Manufacturers' Association, representing the rubber manufacturers of the United Kingdom, has issued a strong protest against the new American tariff, as it affects rubber goods. It is computed, says the manifesto, that 70 per cent. of the rubber supplies of the world are consumed by the United States of America and by Canada, and that therefore it would appear *primâ facie* a difficult case to demonstrate the necessity for protection against United Kingdom manufacturers, who consume only 12 per cent. of the world's supplies. A detailed examination of the proposed tariff applied to articles which—under the existing tariff British manufacturers export to the United States, appears indicative of no other purpose than to cut off completely any chances, already small, of the United Kingdom exporting rubber goods to that country. The principal British articles exported to America are: (1) Printers' rubber-faced blankets; (2) rubber tobacco pouches; (3) rubber football bladders; (3) golf balls and sports articles.

The Argument Against High Duties.

In regard to the proposed duties the Association offers the following observations:—

(1) That American competition in this country, particularly in regard to motor and bicycle tyres, has been for some time very particularly felt.

(2) That in respect of bulk lines of rubber goods, other than sports goods, such as golf balls, football bladders, tennis balls and the like, the United States manufacturers are subject to little British competition. The high degree of perfection attained by British workpeople in the manufacture of such sports requisites renders American competition in quality extremely improbable. The American consumer, therefore, is likely to be prejudiced considerably if the proposed *ad valorem* duty of 45 per cent. is imposed.

(3) It is inconceivable that at the present moment, when the United States of America is favourably situated from the nature of things to develop her export trade, the economic law that the export of goods can only be paid for by the import of goods should be neglected.

Mr. A. L. Viles, of New York City, appeared before the Finance Committee of the Senate on December 7, 1921, and is reported to have said: "Gentlemen of the Committee, . . . I am general manager of the Rubber Association of America, representing 90 per cent. of our rubber manufacturers. . . . We want to emphasise our belief, with respect to tyres, calling for a 10 per cent. duty, that the duty should not be higher, as *we fear reprisal tactics of other nations* in our foreign markets *more than we do the competition from importation.* That is all we have to say."

The Association urges in conclusion that the best interests of both countries will be served by no increase being made in the existing rates of duty on rubber goods, and it is its hope that the foregoing expression of opinion will in some measure assist in accomplishing this end.

AN INTERESTING UNDERGROUND PHOTOGRAPH.

Ingersoll Jackhamers sinking a 70 degrees Stope at the Replogle Mine of the Wharton Steel Co., Wharton, N.J.

HADFIELDS Ltd.

East Hecla and Hecla Works, Sheffield, England.

Workmen employed during the war, over 15,000.
Works area over 200 Acres.

HADFIELD'S SPECIAL FORGED STEEL BALLS FOR BALL AND TUBE MILLS

MINING REQUISITES
of all kinds.

ERA
(Trade Mark)

Sole Makers of HADFIELD'S PATENT
MANGANESE STEEL
"The supreme material for the wearing parts of Stone Breaking and Ore Crushing Machinery, Tramway Track Work, etc."

Complete Stone Breaking and Ore Crushing Plants

Head Office for South Africa:
46 & 47, CULLINAN BUILDINGS,
JOHANNESBURG.
Phone 5930. Tel. Add.: "Hecla."

Rhodesian Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers, Bulawayo.

Natal Agents:
THOMAS BARLOW & SONS (S.A.) LTD.
Smith Street, Durban.

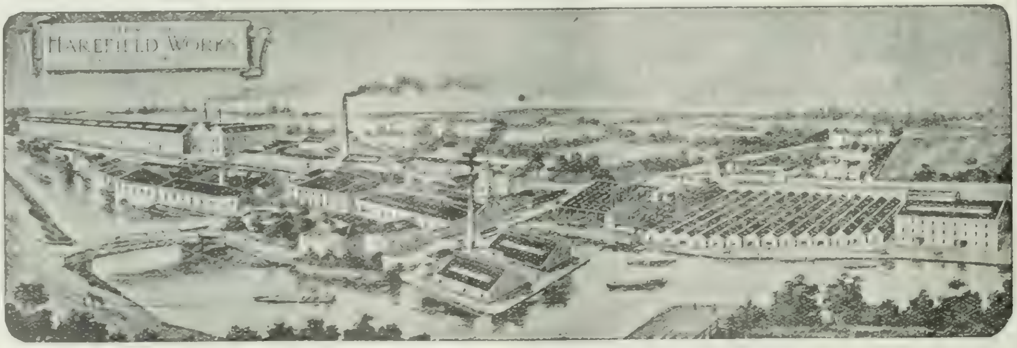
BELL'S UNITED ASBESTOS (Lond.)

AFRICAN AGENCY, LIMITED,

Telephone No. 345, Central, 24-26, CHORLTON CHAMBERS, HARRISON ST., JOHANNESBURG. P.O. Box 2642.

SOLE AGENTS IN SOUTH AFRICA FOR

BELL'S UNITED ASBESTOS CO., LTD., LONDON.
(OLDEST ASBESTOS MANUFACTURERS IN THE WORLD).



VIEW OF GENERAL ABESTOS WORKS, HAREFIELD, MIDDLESEX.

"GLADIATOR" ASBESTOS CEMENT BUILDING MATERIALS.

Over 170 million square feet "Gladiator" Building Material supplied the British Government during the War for Army Hutments, Hospitals, Aerodromesition Factories and the like.—Enquiries invited.

Latest Developments in Rhodesia.

THE SABIWA STARTS MILLING — BROKEN HILL'S CAPITAL INCREASED—HYDRO-ELECTRIC SCHEMES IN PROSPECT—RHODESIA EXPLORATION AND PLANET-ARCTURUS REPORTS—THE FRED AND TURKOIS MINES.

Additional interest is now being taken in the mining industry of Rhodesia. The greatly improved outlook for the Cam and Motor, coupled with better development results in the Globe and Phoenix and the discovery of several encouraging prospects in various parts of the country seems to indicate something in the nature of a revival for the mining industry of Charterland; and in the following pages the most recent developments in Rhodesian mining are noted and latest particulars as to output are given.

The Sabiwa Starts Milling.

The most interesting local piece of mining news that there has been for some time is probably the restarting of the Sabiwa Mine at Gwanda on a producing career. The new mill began running last week, and as developments are reported to be good there is every hope that it means a permanent addition to the list of our larger producers. It is nearly twenty years since the old 40-stamp battery, supplemented by a number of Huntingdon mills, originally started operations, but costs proved prohibitive owing to the refractory nature of the ore. Now that still more refractory ore is successfully treated at the Cam and Motor under the same control, there is every reason for optimism as to the future. The London and Rhodesian people seem to have another good string to their bow in the Sherwood Star property, and it is interesting to note that their operations are gravitating more and more to this end of the country (says the "Bulawayo Chronicle").

NORTHERN RHODESIA'S BIGGEST PRODUCER.

The Broken Hill Smelter.

RHODESIA BROKEN HILL.

Creation of 2,600,000 Five Shilling Shares.

An extraordinary general meeting of the Rhodesia Broken Hill Development Company, Ltd., was held on April 5 at Cannon Street Hotel, E.C., to consider a resolution increasing the capital of the company to £1,000,000 by the creation of 2,600,000 new shares of 5s. each. Mr. Edmund Davis, the Chairman, presided, and in the course of his speech stated: This meeting has been called to consider the increase of the capital of the company from £350,000 to £1,000,000 by the creation of 2,600,000 shares of 5s. each. At our last annual general meeting, held on July 27, 1922, detailed information was given of ore reserves, when particular mention was made of the estimate of 104,000 tons of sulphide ores and 650,000 tons of oxidised zinc and lead ores, and reference made to the great attention being paid to the eventual production of zinc and to the experiments which had been carried out on the property. At that meeting we had begun negotiations with the Rhodesian railways in relation to rates on zinc ore from Broken Hill to the Victoria Falls, as it might have been advisable to harness power at that spot, in the event of our not being able to obtain water power within a reasonable distance of our property. It was necessary to obtain this information so that we should be in a position to decide whether metallic zinc could be produced in Northern Rhodesia on a profitable basis. In all such matters it is absolutely necessary to keep capital expenditure within reasonable limits, and, owing to the great distance of our property from the port of Beira, the settlement of railage rates on plant up and production out was one of the most difficult and important matters to be settled.

New Railway Arrangements.

On completion of treatment experiments which we have carried on for about three years, we took up the question of rates with the Rhodesian railways, and we have dealt with the British South Africa Company on the subject of royalties, water power sites, the right of prospecting [illegible] timber and additional land rights.

In all these negotiations, which has been entrusted to me, the various suggestions I have made have been met in a most friendly way, and the arrangements we have come to should, I think, prove beneficial to all concerned, which is, in my opinion, the best and only way of arriving at a satisfactory and permanent settlement. The reduced railway rates on lead are to apply from the date when the sulphide plant is at work, and will remain in force till December 31, 1928.

We have also settled rates on coal from the Wankie Colliery Company to the mine, and are to be allowed a rebate of [illegible] per cent. on machinery, and sulphide, zinc, and power plants from Beira to the mine.

The British South Africa Company have agreed to a reduction in royalties on lead and have granted a fifty years' lease of not only the water power we may develop on the Mulungushi Falls, situated about twenty-eight miles from the property, but also of 5,000 acres of land at this site. This land and the water power are to be held subject to a rental at the rate of 10s. per h.p. per annum for the first 2,500 h.p., with a minimum of £1,250 per annum, and 15s. per h.p. per annum for anything in excess, and 6d. per acre per annum for the land.

There is to be a flat royalty rate on the zinc and the vanadium [illegible] and we are to be charged on the value of the silver for which we may receive payment.

The question of water power has not only been investigated by members of our own staff, but also by the consulting electrical and mechanical engineers of the Central Mining and Investment Corporation, Ltd., Johannesburg, who are satisfied that we can harness and develop the minimum of 2,500 h.p. to which reference has been made, and that it may also be possible on this particular site to harness an additional 7,500 h.p., which, given satisfactory profits being made from the treatment of the lead and zinc ores, should be required at no distant date. Subject to the resolution being passed, we intend to issue to the shareholders at par three shares in five of the registered holding, which will absorb 84,000 shares, and provide us with £84,000 of additional working capital.

The plant to deal with sulphide ores, which is a simple proposition, is estimated to cost about £60,000; the harnessing of 2,500 h.p. at Mulungushi, the transmission lines and other electrical plant required on the property are estimated to cost £120,000; the Pilot plant to produce one ton of zinc per day and some vanadium concentrates is estimated to cost £40,000, making a total of £220,000. This plant, after it has served its purpose in the treatment of zinc ores, will be utilised for the concentration of vanadium [illegible] deposit.

At our last meeting, in reply to questions, we gave you particulars of the satisfactory reductions we had obtained in returning charges and sea freight on our lead, and mention was also made of the reductions our men had willingly agreed to accept. We now particularly wish to state how pleased we are to be able to place on record our appreciation of the manner in which our employees have carried out their work under, at times, difficult and trying circumstances.

As regards the future, we may only now be in the infancy of our career. With ample funds and the production of zinc and lead on a reasonable scale, it may become necessary at no very distant date to make very large additions to our plant. This question will not arise till we have obtained satisfactory results from the Pilot plant we will now erect for the production of zinc, and so that there should be no delay in the additional equipment, when we are satisfied that the time has come to warrant our incurring the expenditure, we have arranged with our Consulting Metallurgists, Messrs. Hooper Speak and Co., for their Mr. S. J. Speak to leave within a few days on another visit to our property, so that he should be able to discuss its future development and equipment with the management on the spot, and give us the benefit of his advice on his return.

Reference has already been made to the estimate of 650,000 tons of excellent zinc and lead ores, which would be sufficient for a daily production of 25 tons of zinc for twenty years, and it will interest you to know that the 650,000 tons include about 150,000 tons already mined and placed on dumps, and the greater part of the remaining 500,000 tons exists at depths of less than 150 ft., which should mean very low mining costs.

In reference to treatment, prolonged tests have been made on a small scale at the mine, which give sufficient assurance that all chemical difficulties have been overcome, and though we are advised that it would be reasonably safe to proceed now to the erection of a plant to produce 25 tons of zinc per day, we prefer to gain experience with an intermediate-sized plant, so that we may make any improvements which may be required.

Under these circumstances we intend to start with a Pilot plant which should produce 1 ton of zinc per day, and this plant will subsequently be remodelled and converted into a vanadium refinery.

The zinc ores to be treated are estimated to contain 1 per cent. of vanadic oxide, which should be recovered at a low cost as a by-product from the zinc plant at the rate of about 30 lbs. of metallic vanadium for each ton of metallic zinc produced. Though this vanadium product should be realisable at satisfactory prices, it will be a by-product from the production of zinc, which alone should prove sufficiently profitable, since as regards the chief requirements for its production—ore supplies, power, sulphur, and coal—very few producers can be so favourably situated.

Of course, we are at some disadvantage owing to long railroad haul to the coast, about 1,330 miles, but South Africa consumes about 50 tons of zinc per month, and, though developments in cyanide practice may diminish this amount, there should be a considerable local market for the zinc, which we could supply if desired, although the zinc we intend to procure may be too pure for most South African purposes; but, if so, we could readily add the required impurity, unless we find it more profitable to export, should it still be possible to obtain a premium for electrolytic zinc.

The zinc we have so far produced in the experimental plant has been nearly pure, assaying 99·813 per cent., but even this should be improved on when the new plant is erected.

As regards mineral rights, our grant has an area of 35 square miles, and there is no reason why additional discoveries should not be made, surface indications being favourable, and every additional discovery can but add to the value of the property.

RHODESIA EXPLORATION COMPANY, LTD.

The adjourned fourth ordinary general meeting and also the fifth ordinary general meeting of the Rhodesia Exploration Company, Ltd., were held on April 5 at River Plate House, Finsbury Circus, E.C., Mr. H. G. Latilla (the Chairman) presiding. In the course of his remarks the Chairman said:—

The position with regard to the chrome output is that the transport rates are still prohibitive, and until satisfactory reduction in these rates have been effected it will not be possible to develop this asset. The property is one of great possibilities, comprising as it does practically a great basin of chrome ore averaging about 50 per cent. chrome.

With regard to the asbestos property, developments during the past twelve months have been extremely satisfactory, proving that the deposit will extend to a great depth, and that the fibre at the deeper zones is of a better quality than that found nearer the surface. As a result of the experience obtained from a small experimental plant erected at the mine, from which a steady output of dressed fibre has been obtained, plans are being prepared for the erection of a plant capable of treating a much larger tonnage and of producing a fibre dressed to meet the requirements of consumers. The ultimate success of this venture naturally depends upon the condition of the asbestos market and its capacity for absorbing the output of the various mines. Although the market has been in a very depressed state for the last two years, there are now indications of a revival. I can assure you that, given a good market, our asbestos will be found to be equal to, if not better than, any so far produced in Rhodesia, and the mine will be one of the largest producers.

Mining Claims.

From information which has been received by your Directors, developments in the neighbourhood of our claims situated in the Que Que district and others in which your company holds a half-interest with the Globe and Phoenix Company show the existence of further rich ore chutes on adjoining properties. At the last meeting it was hoped that some satisfactory arrangement could be come to with the Globe and Phoenix Company, but up to now it has not been possible to make progress. Meanwhile our interests are being protected.

As regards the Anglian claims, Mr. L. G. Hutchison, who was acting mining engineer during Mr. Denny's stay in England, made an offer to your Directors that if the company provided £5,000 for development work and purchase of machinery, he would carry out the work on a profit-sharing basis. This has been done, and he expresses his confidence in the proposition and hopes to develop these claims into a payable and substantial mine.

PLANET-ARCTURUS GOLD MINES, LTD.

The report of the Directors presented at the eleventh ordinary general meeting of the company, held at London, E.C., on Wednesday, April 4, 1923.

Mines.

The lessees of the company's mines have treated during the year to December 31, 1922, 70,610 tons of ore, which have yielded 27,532·05 ozs. of fine gold of a realised value, including premiums, of £126,884; less working costs, excluding development redemption, £105,426; leaving a balance of £21,458; to this must be added premiums on gold from the preceding year, reduction in stocks of stores, less interest, etc., £11,983; leaving a surplus of £33,441, which has been applied in redemption of the lessee's expenditure recoverable under their lease, leaving a balance due to them at December 31, 1922, of £115,483, including accrued interest to that date, which balance is in addition to the amount appearing in the balance sheet in respect of advances made prior to the lease and accrued interest.

Ore Reserves.

The ore reserves which, as reported during the year were revalued at May 31, 1922, were estimated at December, 1922, at 65,860 tons, of an average value of 8·94 dwts. per ton, which is practically equivalent to the average value per ton recovered during the year under review, after allowing for loss on extraction. It will be seen that there has been no addition to the tonnage of payable ore, a small amount only of development work having taken placed during the last quarter of 1922, when two new winzes were commenced from the 5th level in the Arcturus mine. The east winze at end of December had reached a depth of 47 feet, the values averaging 19·4 dwts. over 70 inches, and the west winze at the same date was down 35 feet, averaging 17·8 dwts. over 57 inches. It will be noted that there has been a marked reduction in working costs per ton during the past year, the average, excluding development redemption, being 29s. 10¼d. per ton, as against 34s. 7¼d. for 1921.

TRANSVAAL AND RHODESIAN ESTATES, LTD.

The report of the Directors submitted at the annual general meeting of the company held in London on April 6, 1923, states:

The net profit for the period under review amounts to £21,313. Revenue again was chiefly derived from mining operations and dividends from real estate interests. This profit, together with the balance brought forward from the 31st December, 1920, amounted to £106,831. Of this amount the Directors deemed it advisable to place £50,000 to reserve, leaving £56,831 to be carried forward.

From this amount a dividend No. 1, of 2s. per share free of income tax (equal to about 7½ per cent. gross) amounting to £21,667 was paid on the 16th January last to all shareholders registered on the books of the company as at 19th December, 1922.

Mining Interests.

Fred Mine.—The results of the working of the Fred Mine for the 21 months to 30th September, 1922, are as follows: Tons milled, 33,225; yield per ton in dwts., 14·70; cost per ton, including development redemption, 56·87s.; cost per ounce produced, 77·24s.; total working profit (before providing for depreciation), £27,880; ore reserves (including ore fully developed and some blocks not quite fully developed), 55,785 tons; assay value, 14·10 dwt.; total ounces in reserves, 39,328; recoverable gold in reserves (90 per cent. extraction and gold at 85s. per oz.), £150,430. Tonnage milled.—The tonnage milled is below expectation mainly on account of difficulties of a temporary nature. Certain alterations to the milling and reduction plant have been effected and better results may be anticipated. During the months of December and January last the mill was not running at its full capacity owing to stoppage for repairs. Costs per ton.—The increased cost per ton is due to exploratory mining and development done in the Fernando block, which was charged to current mining cost. In the first eight months of 1921, when Fernando was being explored, the cost averaged 58s. per ton. In the next eight months after the Fernando work was suspended, the cost averaged 52·6s. per ton. The reason stated above also accounts for the increased cost per ounce of fine gold produced. Ore reserves.—The ore reserve position is slightly better with respect to tonnage, but the gold contents are lower than at the end of the year 1920. The reduction in value is brought about by a recalculation of some of the previous reserves in the light of fuller information obtained from the results of stoping within the blocks.

Turkois Mine.

As foreshadowed at the last meeting, the company has acquired a 98 per cent. interest in this property on a share basis. Developments are proceeding. The Turkois Mine is situated in the Shagari district. Speaking of the Turkois line of reef, the Government Geologist has stated in one of his reports: "It is probably the longest and most continuous line in the territory yet discovered." The Cam and Motor Mine is situated in the same district. Persons qualified to express an opinion hold the view that the Turkois may prove to be one of the biggest mines of Rhodesia.

Chrome and Asbestos.

Chrome.—With the exception of the necessary work to protect the claims no active operations have been carried out on the chrome deposits at Umvukwe in which the company is interested, during the period under review, as owing to the heavy transport charges the existing market prices are not remunerative.

Asbestos.—Developments on this property have proceeded satisfactorily, and consequent upon a successful experiment as to the best method of dressing the rough cobs a large and improved plant will be erected which will deal not only with a much larger tonnage but will produce a better dressed fibre. It is gratifying to note that the quality of the fibre at the lower depths is better than at the shallower levels. The Consulting Engineer, in a recent cablegram, states that developments are now more than sufficient to show that the deposits will continue indefinitely at depth.

ASBESTOS IN RHODESIA.

A correspondent of the *Bulawayo Chronicle* points out that at the annual meeting of the Chamber of Mines in dealing with the asbestos industry Mr. W. A. Wright referred to the Rhodesian output as only one-tenth that of Canada. This is unquestionably true as regards tonnage, but the bare statement conveys a very distorted impression of the relative importance of the industry in the two countries, as is shown by the Canadian Government statistics just to hand. It is true Canada produced 136,000 tons of all grades as against 14,000 raised in Rhodesia, but the value is expressed as something over 14 million dollars (about £3,000,000) as against £577,000 for the Rhodesian output. We are, in fact, quite a way ahead of Canada in regard to high-grade of fibre and it no longer requires any stretch of the imagination to see that we must inevitably displace Canada at a not distant date as far as total value of our output is concerned. Our average value per ton is £40 as against less than £8 for Canada.

RHODESIAN ARSENIC.

It is always good to see an increased demand for products of Rhodesian mines, and the old adage that it is an ill wind that blows nobody good is once more illustrated by the enormous increase in the consumption of arsenic due to the ravages of the cotton boll weevil in America. Two brands of cattle dip are already manufactured in South Africa from arsenic mined at Umtali and Gwanda respectively, and it is not unlikely that other properties may now be worth opening. There is something like a scare in America over the shortage of supplies, and by a special resolution of the U.S. Senate an inquiry into the sources and methods of production of arsenic is being carried out by the Bureau of Mines, the Geological Survey and the Department of Agriculture.

RHODESIAN ARSENIC.

The Champion Mine in the Umtali District.

SELUKWE GOLD.

The report of Selukwe Gold Mining and Finance Company for year ended 31st March, 1923, states that the company retains a holding of 88,880 fully paid 2s. 6d. shares in Kafue Copper Development. The capital and finances of that company have been successfully reorganised and £20,000 of liquid working capital provided. The income from dividends, interest, etc., amounted to £1,556. After taking into account London expenses (£855), income tax and amount standing to debit of profit and loss brought forward, profit and loss account at 31st March, 1923, shows a credit balance of £511.

Nigel Agitation Revived.

Mr John S. Sheldrick, a London agent of the Nigel Gold Mining Company, has just issued a lengthy rejoinder to the recent circular by Mr Horatio Gamble, of Johannesburg, appealing for support from shareholders in an agitation against the policy of the directors. Both the original circular and Mr Sheldrick's reply are too lengthy, and in parts too strongly worded, for reproduction in our columns. The latter gentleman concludes: "The annual report for 1922 is in shareholders' hands, but since it was issued the Board and the consulting engineer—who, by the way, expresses himself as satisfied with the present position—have been giving the closest attention to the requirements of the future, and I anticipate that at the annual meeting on the 30th proximo the Chairman will feel more at liberty to enlarge on the possibilities and requirements of the future than was possible or prudent when the report was drafted. . . . . Perhaps I may add a few facts which some of the new shareholders may not be aware of. This company has paid away in dividends nearly £900,000 under the present Board of Directors or some of them. The Board, at insignificant cost, pegged out the 346 claims now being so hopefully tested. They did not buy them—and I submit that that does not look like the act of a supine or apathetic body of directors. In the course of the driving from the Sub-Nigel mine two chutes containing payable reef matter have been discovered. The company still has, according to the last accounts, between £30,000 and £40,000 in cash in hand."

Rhodesia's Mineral Output

DETAILS FOR MARCH.

We have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of March, 1923, with the comparisons and values. The full list of gold producers is as under:—

MATABELELAND.

Bulawayo District:

	No. of stamps.	Tons Treated.	Yield Ozs.	Value £
Abercorn (Abercorn G.M. Co., Ltd.)	5	552	345.98	1,453
Do. (sands)	—	382	98.32	413
Addie Iris (H. A. D. Tansley)	2	55	45.93	193
Do. (sands)	-	135	71.57	301
Antelope	10 4P	810	166.27	698
Bapaume (A. W. Wilson)	3	180	45.16	190
Bena (D. J. van der Berg)	3	95	19.56	82
Betty (Ubique Invest. Trust, Ltd.)	(15)	233	41.73	175
Blue Bird (E. R. H. Lewis), February, sands	—	300	28.42	119
Do. March	3	150	43.98	185
Bute (J. Whyte)	(5)	55	55.83	234
C (L. Granger)	5	400	36.27	152
Do. (sands)	—	520	89.41	376
Camp (Carson Mines, Limited), February, slimes	—	940	125.96	529
Do. March, slimes	—	900	89.78	377
Daybreak (F. P. Harrill), February	5	140	28.12	118
Do. March	—	310	39.67	167
Dorothy (Maidwell & Price)	3	200	57.67	242
Druid (Druid Syn.)	5	380	29.67	125
Do. (sands)	—	260	10.77	45
Elumba (Clegg & Bosomworth), January	5	665	148.95	626
Do. March, slimes	—	450	29.24	123
Flora (E. H. Machell) clean up	—	—	4.75	20
Fred and Fred IW (Trans. and Rhod. Estates, Ltd.)	10 4P	1,450	785.12	3,327
Do. (sands)	—	1,450	312.27	1,320
Freda (Coghlan & Black)	3	473	28.52	120
Hazard (W. W. Cummins)	5	412	168.95	710
Henriette (T. Berwitz)	2	100	45.60	192
Hester (J. L. Bester), pannings	—	—	82	3
Horn (Horn Reef Syndicate)	10	600	94.16	395
Imp. (Imp. Synd.)	5	95	119.59	502
Jessie (E. Hogg)	5 1P	225	69.60	292
John (J. F. Smith)	3	30	9.79	41
K. & B. (W. Kendall), January	5	140	110.72	465
Do. February	—	600	240.60	1,010
Do. (Newtonfontein Associated Mines), March	—	350	56.48	237
Killarney and Hibernia (Ubique Invest. Trust)	15	1,208	175.08	739
Do. sands	—	575	15.43	65
Lone Hand (Horn Reef Syn.), sands	—	1,425	118.77	499
Lonely Reef G. M. Co., Ltd.	—	5,350	1,203.08	5,177
Do. (slimes)	—	5,350	2327.54	9,968
Mission (T. Berwitz)	(5)	60	21.07	88
Mystery (W. Burden), February	dolly	4	2.70	11
New Coburg (W. E. Hunt)	2	70	67.57	284
New Eclipse (J. R. Stewart)	5 1T	910	298.35	1,253
Do. (sands)	—	580	57.86	243
Occupation (M.P.W. Syn.)	2	80	27.95	117
Old Nic (Old Nic Slimes, Ltd.), slimes	—	1,800	110.22	463
Owl's Nest (T. Berwitz)	5	38	27.00	113
Progress (Hoar & Simon) sands	—	600	38.08	160
Reco (Almeida & Corbett)	3	200	192.34	808
Do. (sands)	—	500	141.12	593
Rewi (B. H. Jones), January	5	100	46.17	194
Do. March	—	133	72.60	305
Rhodesian King (R. Aserman)	5	410	96.04	403
Rhodian (O. L. Edwards)	dolly	19	27.41	115
Rozi (A. Sokolich)	5	150	31.20	131
Scoveni (W. H. & D. A. Barrows)	2	134	78.87	331
Turk (Hickey & Finlay)	5	329	43.91	185
Do. sands	—	195	36.56	154
White Rose (B.B. Syn.), sands	—	303	26.37	111
Yellow God (Mrs. F. Cripwell)	5	136	15.45	65
Premiums: Aug.-Oct., 1922	—			3,991
Bulawayo District Total			8,994.87	£42,123

Gwelo District:

	No. of stamps.	Tons Treated.	Yield Ozs.	Value £
Atlanta (F. C. Barrett)	10	390	50.56	212
Babs (Beach & Boby)	5	565	103.42	434
Do. (sands)	—	270	28.34	119
Black Prince (S. Levine, Adj., Aug., 1922				1
Do. (G.P. G M. Co., Ltd.)	5	368	75.12	315
Blue Jay (Raine & McLaren), pannings			1.23	5
Broken Luck (J. C. Bradley), February, sands	—	200	10.70	45
Do. March, sands		250	20.35	85
Chicago (J. Gunn) clean up, Feb.			8.47	36
Cyril Evelyn (W. J. Wright) (sands)	—	150	7.06	30
Danga (Cribb & Secar)	5 1P	170	132.05	555
Do. (sands)		200	23.21	97
Dolly (P. F. Hever)	dolly	20	8.19	34
Eva (G. H. H. Matthews)	5	380	15.95	67
Do. (sands)	-	250	30.81	129
Falcon Mines, Ltd. (Copper, £14,488; Silver, £799)	28N 2T	16,037	2,431.19	11,285
Flowing Gold (A. J. Marchant)	2	200	70.88	298
Gaika G.M. Co., Ltd.	5 1C	4,327	1,104.45	4,683
Do. (sands)	—	4,327	450.29	1,909
Gem (W. J. Wright)	2	64	7.00	29
Glen Hume (Glen Hume Syn.)	5	750	67.71	284
Do. (sands)	—	485	31.58	133
Globe & Phoenix G.M. Co., Ltd.	10 12P	6,328	4,777.91	20,067
Do. (sands)	—	9,225	1,173.73	4,930
Do. (slimes)	—	1,295	223.18	937
Indarama (J. G. Austen)	5	440	162.70	683
Do. (sands)	-	300	37.94	159
Lucerne (J. Wyser)	2	110	27.26	115
Mary Fraser (J. Thornett), Feb.	H	100	11.47	48
Do. March	—	300	30.60	129
Moss (James & Worthington)	5	836	523.34	2,198
Nib's Luck (G. M. Hughes), sands	—	400	35.31	148
Northampton (G. M. Hughes)	5	60	25.19	106
Obvious (H. H. Field), sands	—	300	13.92	58
Old Stuff (Old Stuff Syn.)	2	54	15.19	64
Poplar (E. W. Roberts)	2	25	10.37	44
Reden (A. Malcolm)	5	360	74.45	313
Do. (sands)	—	184	60.73	250
Responsible (W. J. Jenkins), pannings	-	-	1.76	8
Riverlea (G. C. Hooper) (sands)	--	1,335	187.61	788
Rothamstead, February, pannings	—	—	10.64	45
Do. March	5	110	58.35	245
Running Spruit (J. A. Rawstone) sands	—	175	1.40	6
Shamrock (C. W. Leppington)	5 1P	500	73.38	308
School Boy (Mrs. R. O. Dollar), Feb.	5	220	46.24	194
Sir Walter Scott (Thornett & McJennett), January	(5)	110	14.94	63
Trial (Field & Eriksen)	3	102	22.05	93
Do. (S. G. Swanepoel), pannings, September, 1922	—	—	1.36	6
Vedas (C. Johnson)	1	30	8.35	35
Veracity (L. R. Evans)	5 1P	800	20.313	853
Do. (sands)	—	550	41.43	174
Do. (slimes)	-	250	—	—
Zabonkwe (W. Holmes), sands	—	500	46.59	196
Do. (slimes)	-	240	—	—
Gwelo District Total			12,599.08	£54,048

MASHONALAND.

Agram (J. B. Labuschagne), Feb., sands	—	348	71.76	301
Aurora (Aurora Syn.)	5	883	116.63	490
Brilliant (Eureka Syn.), Feb., sands	—	200	9.77	41
Cam & Motor G.M. Co., Ltd.	5 BM	15,600	7,187.69	30,482
Concession (Bennett & Anderson	2H	360	53.03	223
Cornubian (Curtis & Colliver), Feb.	5	270	42.27	178
Cricket (F. C. Luxat)	5	390	102.12	429
Do. (sands)	—	350	32.76	138
Crown (Crown Mining Co., Ltd.), February	3	90	17.68	74
Dab (H. F. Wilson)	5	30	9.07	38
Do. (sands)	—	30	3.71	16

Hartley District.

Eileen Alannah Mining Co., Ltd.	6 N	863	15.33	64
Do. (sands)	—	690	140.50	590
Do. (slimes)	—	1,000	184.02	773
Gamecock (Gamecock Synd.)	5	350	78.64	330
Glendarra W. Ext. (C. S. Marks)	2	200	5.13	22
Golden Valley (J. Mack & Co.)	10	929	253.49	1,065
Do. (sands)	—	627	234.76	986
Do. (slimes)		629	—	—
Grandeur (Luckspot G.M. Synd.)	5	280	94.63	397
Do. (sands)	—	500	—	-
Hepworth No. 2 (J. W. Banner)	(10)	375	75.00	315
Do. (sands)	—	250	9.99	42

	No. of Stamps	Tons treated	Yield Ozs.	Value £
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	2	[illegible]	[illegible]	[illegible]
Do. [illegible]		[illegible]	[illegible]	[illegible]
[illegible], sands	—	[illegible]	[illegible]	[illegible]
[illegible]	10	[illegible]	[illegible]	[illegible]
Do. [illegible]		[illegible]	[illegible]	[illegible]
[illegible] & K[illegible])	2	[illegible]	[illegible]	[illegible]
Do. [illegible]	—	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible], sands		[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Do. [illegible]	F		[illegible]	[illegible]
[illegible] & [illegible])	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	2	[illegible]	[illegible]	[illegible]
Do. [illegible]	—	[illegible]	[illegible]	[illegible]
[illegible]	10	[illegible]	[illegible]	[illegible]
Do. [illegible]		[illegible]	[illegible]	[illegible]
[illegible] & [illegible], sands		[illegible]	[illegible]	[illegible]
[illegible] & [illegible])	2	[illegible]	71.22	[illegible]
[illegible], sands	—	[illegible]	[illegible]	[illegible]
[illegible] & [illegible])	[illegible]	[illegible]	[illegible]	[illegible]
Do. [illegible]		[illegible]	[illegible]	[illegible]
Rhino [illegible] Synd.)	[illegible]	[illegible]	109.93	[illegible]
[illegible] (B. R. J. [illegible]), [illegible]		[illegible]	13.28	[illegible]
[illegible]	5	[illegible]	64.77	272
[illegible]	[illegible]	218	[illegible]	223
Do. [illegible]	—	[illegible]	[illegible]	107
[illegible]	5	[illegible]	22.27	[illegible]
[illegible] ([illegible] & [illegible])	10	1,240	[illegible]	[illegible]
Do. [illegible]	—	[illegible]	58.28	161
Do. [illegible]	F		3.52	15
[illegible] & Co.), Feb.	10 2P IC	[illegible]	228.46	959
Do. [illegible]	—	1,388	174.46	732
[illegible] & [illegible])	[illegible]	[illegible]	18.14	76
[illegible] (J. G. [illegible]), sand		300	[illegible]	118
[illegible]	10	[illegible]	174.44	752
Do. [illegible]	—	770		
Premium, Feb. March				2,000
Hartley District Total			11,117.35	£48,956

Lomagundi District.

	No. of Stamps	Tons treated	Yield Ozs.	Value £
[illegible] (H. J. R. [illegible]), Feb.	4	250	52.32	220
Do. March	—	[illegible]	[illegible]	191
[illegible] ([illegible] & [illegible])	5 IT	[illegible]	[illegible]	2,858
[illegible] (F. K. Brown) ...	5	[illegible]	21.76	91
[illegible] (J. M. M[illegible])	10	[illegible]	77.01	324
Do. [illegible]	—	[illegible]	[illegible]	171
Ventura (Ventura Synd.)	5	125	22.21	93
Lomagundi District Total			942.43	£3,958

Mazoe District.

	No. of Stamps	Tons treated	Yield Ozs.	Value £
Prince of Wales ([illegible])	10 2N IT	1,728	136.68	574
Do. [illegible]	—	1,728	219.04	920
[illegible] (L. J. [illegible]), sands	—	[illegible]	23.53	99
Rothschild (Cunningham & Buchan)...	10	[illegible]	104.97	441
Second Venture (Hazard Synd.)	2	[illegible]	10.84	45
Wild Cat (Goucher & Moulder) ...	3	—	8.82	37
Mazoe District Total			503.88	£2,116

Salisbury District.

	No. of Stamps	Tons treated	Yield Ozs.	Value £
[illegible] (Santa Claus Synd.), Feb. ...	5	[illegible]	41.34	174
Do. (sands)	—	264	13.05	55
Alliance No. 2 (Alliance Trib. Synd.)	10	673	297.67	1,250
Arcturus State (Goldfields Rhodesia Dev. Co., Ltd.) ...	20 2C	6,200	682.05	2,893
Do. (sands)	—	[illegible]	1,297.86	5,505
[illegible] (J. A. Moore)	5	160	17.13	72
Joking (W. C. Harrison)	8	525	181.06	760
Do. (sands)	—	250	10.82	45
Juno (D. H. Curry), sands	-	390	201.51	846
[illegible] (G. C. [illegible]), sands	—	100	9.48	40
New Umbrella (Moore & Fulton)	5 IH	[illegible]	53.25	224
Do. (sands)	—	640	[illegible]	83
Old Home (F. H. Walsh)	2	306	[illegible]	137
R.A.C. (R.A.C. Synd.), sands		200	[illegible]	106
Red Dragon A (A. V. Carlaw) ...	5	300	32.54	137
Sceptre (J. M. Laing)	2	94	[illegible]	194
Shamva Mines, Ltd.	64 N12T	[illegible]	[illegible]	8,060
Do. (sands)		31,122	4,866.77	20,720
Do. (slimes)		20,958		
Tip Top S.W. (Jumbo G.M. Co., Ltd.)	10	1,500	[illegible]	1,174
Trio (Trio Synd.)	5	486	137.80	578
Do. (sands)	--	324	20.45	86
Victor (E. H. S. Harrison) ...	5	144	11.68	49
Salisbury District Total			10,435.01	£44,186

Umtali District.

	No. of Stamps	Tons treated	Yield Ozs.	Value £
Grand Marika (Marsh & Hatcher)	5	390	47.63	200
Kent (Tallon & Evans)	5	150	43.08	181
Liverpool (H. & H. D. Norris) ...	5	650	229.16	962
Do. (sands)	—	300	50.91	214
Maha ([illegible] & W[illegible])	5	70	32.60	137
[illegible] Mines, Ltd.	40	[illegible]	2,481.12	[illegible]
Do. (sands)	—	[illegible]	308.63	[illegible]
Do. (slimes)	—	[illegible]	—	—
Do. (concentrates)	—	[illegible]	258.35	1,011
Premium, Feb. March				800
Umtali District Total			3,431.48	£15,342

Victoria District.

	No. of Stamps	Tons treated	Yield Ozs.	Value £
[illegible] (D. & J. Laing)	C	1,400	119.31	504
Do. (sands)	—	500	—	—
[illegible] ([illegible] Mng. Synd.)	5	100	27.70	113
Victoria District Total ...			147.01	£617

(GP) Grinding Pan, (BM) Ball Mill, (T) Tube Mill, (H) Huntington Mill, [illegible] Stamp, (N) Nissen Stamp, (C) Chilean Mill, [illegible], (F) Treated at Falcon Mine, (WM) Waterman Mill, (LM) Lane Mill, (EP) Experimental Plant.

SUMMARY OF MINERAL PRODUCTION: MARCH, 1923.

	£
Gold, fine oz. 48,171.11 ...	£211,379*
Silver, fine oz. [illegible] ...	1,620
Coal (raised, [illegible] tons), sales	11,229
Do. used for Coke and Boilers ...	4,151
Copper (blister), tons [illegible] ...	11,188
Chrome Ore, tons [illegible] ...	14,165
Asbestos, tons 885.98 ...	[illegible]†
Arsenic, tons [illegible] ...	2,719
Mica, 7 tons, [illegible] lb.	1,922
Diamonds, carats [illegible]	112
Total ...	£353,553

*Includes £6,791 gold premiums.

†Includes £[illegible] adjustments on sales of asbestos.

ASBESTOS—MARCH, 1923.

Bulawayo District:

	Tons.	£	s.	d.
Croft 1 (Afr. Asb. Mng. Co., Ltd.), Balance Adjust. Feb., 1921 ...	—	51	14	2
Nil Desperandum (Afr. Asb. Min. Co., Ltd.)	80.05	1,701	0	0
Do. Adjustment April, 1922, to Feb., 1923	—	66,650	12	10
Pangani (J. S. H[illegible]), February March	29.80	357	11	5
Shabani (Rhod. & Gen. Asb. Corp., Ltd.) ...	275.49	6,887	7	3
Victoria District:				
Balmain (Afr. Asb. Min. Co., Ltd.)	70.05	1,401	0	0
Do. Adjustment 1.1.22 to 28.2.23	—	2,533	5	0
Gath's (R. & Genl. Asb. Corp., Ltd.) ...	236.17	5,904	5	0
King (Rhod. King Asb. Co., Ltd.)	134.27	2,685	7	7
New Forest (New Forest Syn.), December ...	55.15	265	12	0
Totals	885.98	£88,467	15	3

COMPARISONS—MARCH, 1923.

	fine oz.
Gold—	
Feb., 1923	49,423.71
March, 1923	48,171.11
Decrease	1,252.60
March, 1922	54,643.22
March, 1923	48,171.11
Decrease	6,472.11
February, 1923	£237,018b
March, 1923	£211,379a
Decrease	£25,639
March, 1922	£257,356c
March, 1923	£211,379a
Decrease	£45,977
Silver—	
March, 1923	£1,620
February, 1923	£1,287
Increase	£333
March, 1923	£1,620
March, 1922	£1,511
Increase	£109
Base Mineral Production—	
March, 1923	£140,554d
February, 1923 ...	£99,636
Increase	£40,918

March, 1923	£140,554d
March, 1922	£52,412e
Increase	£88,142

Total Mineral Production—	
March, 1923	£353,553ad
February, 1923	£337,941b
Increase	£15,612
March, 1923	£353,553ad
March, 1922	£311,279ce
Increase	£42,274

a—March, 1923, includes £6,791 gold premiums.
b—February, 1923, includes £28,530 gold premiums.
c—March, 1922, includes £26,079 gold premiums.
d—March, 1923, includes £69,214 adjustments on sales of asbestos.
e—March, 1922, includes £1,777 adjustments on sales of asbestos.

Consolidated Diamonds of S.W. Africa.

POINTS FROM ANNUAL REPORT.

The profit of the Consolidated Diamond Mines of South-West Africa, excluding debenture interest and redemption was £170,131 1s. 10d. In connection with the appropriation of £138,742 from profits for debenture redemption, it should be borne in mind that if the debenture holders exercise their right of exchanging their debentures for shares the whole of the amount from time to time contributed to the sinking fund will be available for distribution to shareholders. The position is regarded as very satisfactory, more particularly when the extremely small sales for the first half of the year are taken into consideration, and in view of the fact that the revival in the diamond trade during the second half of 1922 was only partial. The stock of diamonds on hand has been taken in at cost of production. The reduction in stock which has resulted from cessation of mining operations is reflected in the reduced amount at which the stock appears in the balance sheet.

The extreme depression through which the diamond trade has been passing was relieved during the period under review. Conditions in the diamond market have materially changed, as will be evident from the following figures showing the sales of the company's production to the London Diamond Syndicate during each of the four quarters:—Sales first quarter 1922, £18,017; 2nd quarter, £88,677; 3rd quarter, £148,332; fourth quarter, £339,812. It will be noted that sales are still very much below normal, but the improvement shown is a source of great gratification, coming as it does when European conditions, both trade and political, are so disturbed.

The recovery in the diamond market rendered it necessary for the directors to decide to recommence mining operations in order to supply the demand without further depleting the company's stock of diamonds. As a result of this resumption of mining operations the financial support agreement, which was entered into between the Anglo-American Corporation of South Africa, Limited, and this company, automatically terminated. During the year two conferences have been held between the conference producers and the London Diamond Syndicate, at which certain modifications of the existing agreement were confirmed. These modifications have materially assisted in bringing about the revival in the diamond trade.

The compromise which the directors hoped to arrange with the Administration of South-West Africa as to the amount which should be allowed in terms of the Taxation Ordinance of the 30th December, 1912, for depreciation and interest has not been effected, and the company's solicitors have been instructed to bring the matter for decision before the High Court at Windhoek. The agreement for the unification of the various existing royalties has now been completed between His Honour the Administrator of South West Africa, The South-West Finance Corporation, Limited, and this company. This agreement is bound to result in economies, both to the Administration and this company.

The N.R.C. and "Locals."

THREATENED SHORTAGE OF NATIVE LABOUR.

The mining industry is again threatened with a serious shortage of native labour during the winter months.

The reasons for this shortage, explains the chairman of the Native Recruiting Corporation (Mr. C. W. Villiers), are twofold. Firstly, the British South African natives, finding themselves in the happy position of having plenty of food in their homes, are indulging in a period of idleness and refuse to come out to work. The other reason is that the mining industry, under pressure from the Government, restricted the output of natives from Portuguese East Africa in order to give employment to British South African natives. The result of the preference given to the latter is that the mining industry has depleted its labour force of Portuguese natives by several thousands, and the British South African natives are sitting at home in idleness.

A committee of the Transkeian General Council, appointed to consider native labour matters, has issued a report; but unfortunately their proposals do not suggest any new methods to better the supply of B.S.A. natives. The committee blames the mining authorities for not having exercised more foresight in anticipating a shortage by taking more natives in the early part of the year. During January and February last year there was an abundance of native labour, and each mine had its full complement.

As to how the mining industry was to employ a large number of natives in excess of requirements, or how to house them, the committee does not make any suggestion. The crux of the position is that all the natives wish to come to work at the same time for a period of six months only, and all wish to return to their homes at the same time. It is obviously impossible for the mines to employ all the natives who want work for six months in the year, and to curtail or shut down operations for the remaining six months when the B.S.A. natives are basking in the sun, drinking Kafir beer.

Damaging Fluctuations.

A steady labour supply is just as essential to the mining industry as to any other industry, and constant fluctuations in that supply are probably more damaging to the mining industry than to any other industry.

"The Territorial News" (a Transkeian paper) of May 3 accuses the mining industry of doing all it could to bring about a shortage of labour so as to get more Portuguese natives. This accusation is ridiculous, as the mining industry is only too anxious to employ as many B.S.A. natives as possible; but there must be fair play on both sides. The B.S.A. natives cannot expect the whole mining industry to be kept at a standstill because they will not come out to work except at times which suit their convenience.

"If these natives do not study the interests of the mining industry they cannot expect to be shown a preference over other natives who are willing to work for periods of twelve to fifteen months, as against six months' work by B.S.A. natives, and who come forward in a regular stream all the year round."

No doubt in time the B.S.A. natives will realise the position and come to work more regularly and for longer periods than is their present custom. In the meantime, however, it is essential that the supply of Portuguese natives should be increased as soon as possible in order to obviate a shortage of native labour with a consequent decrease in white employment and revenue.

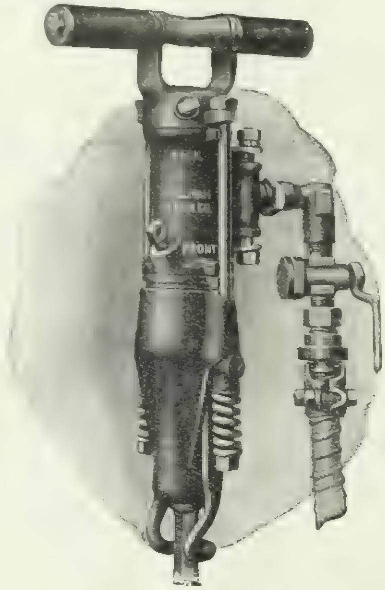
Why Drill With "Rotators"?

Miners Like Rotators.

At a California mine four makes of hammer drills were tested for shaft sinking.

After two weeks' work *a vote was taken* among the three shift crews in the shafts, *two-thirds* of the votes were for Sullivan Rotator and an order has been placed for them.

(*Name on Request*).



Rotators are Powerful.

In California a contractor has been drilling holes 30 ft. deep with

SULLIVAN ROTATORS.

Ten of these holes were bottomed at 36 feet.

Two other makes of hammer drills quit at 18 ft.

The Power and Mudding ability of Rotators is shown startlingly by this record.

(*Name on Request*).

Rotators are Fast.

At the Seneca Mine, Mohawk, Michigan, a shaft sinking record was set by Rotators, viz., 810 feet of 11 ft. 4 in. x 21 ft. 4 in. shaft in four months. In the Lake Superior Mines, Rotators are "standard" for sinking.

Rotators Stay "On the Job."

A Virginia Iron Company ran a Sullivan Rotator from Jan. 2 to Aug. 21 (except for two weeks) drilling ten-feet holes in Quarry Work Total footage, 14,818. Best day's drilling, 258 ft. in 10 hours.

If you need hammer drills, buy Rotators.

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TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

SLIGHT IMPROVEMENT EVINCED—IRON AND STEEL—OVERSEA CONDITIONS—TIMBER AND BUILDING MATERIALS—LATEST METAL MARKET QUOTATIONS.

In a chat this week with a leading Rand commercialist, he stated that Capetown reported better business conditions, which was a hopeful sign, as was also the better prospects of the South African agricultural world regarding the expected rise in wool. This, in conjunction with the anticipated record maize crop, should put money in circulation in the farming districts and eventually benefit Johannesburg.

The European position is still depressing things here and will continue to do so until some satisfactory settlement is reached. While it is generally thought in commercial circles that the £1,500,000,000 offer of Germany was too exiguous, it is felt that the offer afforded some ground (more, as a matter of fact, than has been manifested heretofore) for negotiaticn and should not have been so summarily dismissed by France. The amount of £2,500,000,000, adjudged by an eminent British authority as, one within the capacity of Germany to pay may, notwithstanding France's present attitude, be that on which the Allies will eventually negotiate. It is self-evident that until some settlement is made the present universal chaotic financial and business conditions must continue. South Africa is, perhaps, in a better position than most countries to rise, and it is more than unfortunate that the Union cannot escape the European debacle and take the upward lift which the decreased costs of mining during the past year entitles it to expect. The crux of the position is undoubtedly this—and it is being forced upon the commercial community more and more, week after week—that until a European settlement is come to we cannot look for any radical improvement in business conditions. Some hope, however slight, remains in commercial circles that the separate note to Germany on the part of Britain may evoke a better understanding.

The Knight Central Co. is to close down. The decision of the Directors has been fully vindicated by an impartial Committee of Inquiry.

The first Union's elevator to be erected at Balfour has been completed, and it is confidently stated that the saving to the country when the full system is established will be at least £500,000. It is gratifying to note that the difficulties experienced in the foundation of the Durban elevator will, according to expert advice, soon be surmounted, and that this elevator, in common with others unafflicted with foundation troubles, will soon be proving of value to the Union.

Iron and Steel.

There has been a slight improvement in business during the past week, the Commercial Exchange having shown on one or two days unwonted activity. Orders for the mines up to now this month have been quite satisfactory. Merchants report that every mail brings advice of iron and steel goods in England hardening.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s., cheques plates, 27s. 100; lb.; imported flats, ½ x 3-16, ⅝ x ⅛, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d ; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. lb.; phosphor tin, 2s. 9d. lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 60s and upwards; barbed wire, "Shortthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Second-hand Machinery.

This market has been very dull during the past two weeks with the dealers, and there have been fewer inquiries owing to the scarcity that reigns in obtaining second-hand stocks. All the spares and other material from the companies that liquidated some time ago have been practically cleared out—notably battery spares, steel plates and rails—so that there is now nothing to offer. Occasional orders are coming in from outside places for boiler spares for milling machinery, and as there is such a scarcity of battery spares many mines are taking up some of their old disgeneral repairs to keep things going. Tubing is very scarce in all sizes, and prices are firming up considerably. There appears to be a little better tone for certain mining machinery from one or two outside prospects that have been taken up lately, north and South. The dullness of business is so palpable that many dealers appear to have the same order, and until there is another company in the market with its machinery the miners will have to be content with purchasing new material, which, of course, means added costs in their production, so that it is an ill wind that does not benefit [illegible] at this stage [illegible]. A good deal of mining supplies today and a well-known second-hand mining material dealer are to be had practically at previous prices, while others appear to be hardening a little. Business, in short, is at the moment dull, and we are, with others, looking forward to better times.

British Conditions: Mail Week.

Iron and Steel.—The outlook in mail week showed prices generally with an easier tendency. Buyers are refusing to commit themselves at the higher levels except for small quantities, and although the works have sufficient orders on their books to keep them well employed for some time to come, there is a dearth of new orders. Buyers in Britain, under present circumstances, are shy of placing orders for forward delivery on the Continent, owing to the fear of difficulties regarding delivery.

Pig Iron.—No. 3 Cleveland iron has been sold at 134s. at Grangemouth. Scotch iron is also very firm at £6 to £6 2s. 6d. at furnaces. Basic iron is quoted at about £6.

The French in the Ruhr.

A British manufacturer, after a visit to the Ruhr, says in the *Ironmonger*, in mail week, *inter alia*, that his visit was to secure the delivery of steel plates and sections contracted for prior to the Occupation. He found, however, that the French will not allow the export of steel ordered before the Occupation, except under a French permit and the payment of an export tax of 10 per cent. The German Government is prepared to authorise its Nationals to dispatch the steel ordered before the Occupation without a German licence and without paying any tax to the German Treasury, provided the French waive their demands in regard to licences and taxes. But the French Army Headquarters at Düsseldorf has flatly turned down this proposal. This manufacturer says the British Government should make the most energetic representations to the French Government to secure the release of steel ordered by British firms prior to the Occupation. If, he says, the British Government does not take strong action to protect the interests of nationals, British shipbuilding will sustain a serious blow, as the construction of a large number of vessels is already held up, and thousands of workmen are walking the streets for want of steel, which is rusting in the Ruhr. In this connection it should not be forgotten that, through the non-dispatch of this steel, the British Government loses the 26 per cent. Reparation Tax payable on such imports. The ships for which this Ruhr steel is required are being built by shipbuilders at cost price or less than cost, simply to keep their workmen employed, and it is an economic impossibility to use highly-priced British steel for the construction of these boats. British shipbuilding is thus badly hit, as delivery of Ruhr steel cannot be obtained, and the rise in steel prices in England prevents orders for fresh ships being placed. In the opinion of this visitor to the Ruhr (twice since the Occupation), there is no sign of the German resistance weakening. In the meantime, this correspondent says, by throttling an important industrial area, such as the Ruhr, serious injury is being done to international trade at the very time that the whole world should be working to make good the devastation and stagnation of recent years. Other British industries besides the shipbuilding are suffering. All over the Ruhr one meets merchants from all countries making vain efforts to obtain delivery of material, the want of which is causing serious unemployment abroad as well as in Britain.

Iron and Steel.

Staffordshire common bars 14s. 3d., galvanised corrugated sheets 23s. per cwt.

A large field of copper ore and sulphur pyrites has been discovered in the north of Sweden by the Lundberg method of searching out metals by magnets.

Sir W. G. Armstrong, Whitworth and Co., (Ltd.), of Newcastle-on-Tyne, have formed a subsidiary company in Belgium, with a capital of 100,000 francs, under the name of Compagnie Belge Armstrong Whitworth Soc.

Wireless.

In the House of Commons, on March 27, the Postmaster-General stated that invitations to tender for the construction of the masts, 800 feet in height, required for the high-power wireless station, which is to be owned and operated by the State, were issued on November 1 last to approved firms only, and that tenders had been received from them and were being considered. The approved firms were: Sir W. Arrol & Co., R. W. Blackwell & Co., Braithwaite & Co., Bullen Bros. & Co., C. F. Ellen (Ltd.), Alec. Findlay & Co., Head, Wrightson & Co., Horseley Bridge & Engineering Co. (Ltd.), E .C. & I. Keay (Ltd.), Motherwell Bridge Co., Powers & Deane Ransome (Ltd.), Stewarts & Lloyds, Tees Side Bridge & Engineering Works (Ltd.), Joseph Westwood & Co., and the Widnes Foundry Co. Tenders had not yet been invited for the construction and equipment of the remainder of the station, but it was proposed to issue invitations to tender to approved firms, according to the class of material or plant required.

Altruism in Business.

Mr. Henry Summers, of John Summers & Son, Ltd., speaking recently at the Shotton Institute, said that his aim in life was to make as much cheap iron and steel as possible, in order to be able to compete with the American and other steel producers. He felt that the present prosperity was not a flash in the pan, and his own hope was that the industry would be spared from internal strife.

Cleveland Ironstone Miners.

Following the conference on March 20, when the Cleveland ironstone miners reconsidered their decision on the subject of working hours, they resolved, on March 27, to revert to an eight-hour day, or, in other words, to work an extra half-hour on five days per week. They announced that they were taking this step in order to assist in reviving the industry and reserved the right to raise the question at the end of a year.

New Electricity Stations.

Electricity stations to serve 10,000 square miles are to be erected at Nottingham, Leicester and Derby, under the great Notts-Derby-Leicester electric supply scheme, which has now received the sanction of the Electricity Commissioners. Some sixty towns and villages are involved in this scheme, which supplies one of fourteen electrical districts mapped out twelve months ago by the Electricity Commissioners.

Wire, Nails and Sheets.

Galvanised wire in 4-cwt. lots; fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 21s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2-ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 23s. per cwt.; flat steel sheets, 25s. per cwt.; black, 20s. per cwt. Bolts and nuts, 50 per cent. discount.

Pig Iron.

Cleveland No. 1, 130s.; No. 3, 127s. 6d.; No. 4, forge, 120s.; mottled, 115s.; hematite, mixed Nos. 125s.; Scotland, No. 1, G.M.B., 125s., No. 3, 120s.; hematite, f.o.b. steelworks, 127s. 6d.; finished iron and steel iron crown bars, £12; best bars and angles, £12 10s.; tees, £13; bars and angles, £10; tees, £11; joists and channels, £10 10s.; sheets, singles, £14 10s.; doubles, £15; plates, ship, £10, boiler, £14; rails, £10 10s.

America.

Prices have advanced, notwithstanding the increased production. The advance, however, has not yet checked buying to any extent, although there is some slowing up in new construction. There is a tendency to pay premiums for prompt deliveries of finished steel materials, and there is some duplication of orders. Blast furnace and steelworks operations are at the rate of 89 to 92 per cent of capacity. A continuance of this activity into the third quarter seems assured.

Pig Iron Production.—The output of pig iron in 1922, according to the American Iron and Steel Institute figures, amounted to 27,219,904 tons, against an output in 1921 of 16,688,126 tons. The 1922 production included 13,841,367 tons of basic iron, 7,843,203 tons of Bessemer and low phosphorus, and 3,976,431 tons of foundry and ferro-silicon.

Steel Castings.—Orders for steel castings declined about 9 per cent. in February. The total bookings for the month were 90,152 tons out of a total rated capacity of the firm's reporting of 96,900 tons.

The March pig iron production was 3,521,775 tons, which is the heaviest month's output in the history of the trade. The steel trade is producing at a similar record rate, with the mills averaging 92 to 95 per cent. of capacity. A general wages advance of from 10 to 11 per cent. is foreshadowed this May month.

Quotations.—No. 2 foundry Bessemer and basic, 31 to 32 dollars, Western Pennsylvania; No. 2 foundry 27 dollars, Birmingham. There are possibilities of a further advance, as the production has been absorbed directly it has been placed on the market.

Billets and steel bars, 45 to 50 dollars.

In the Pittsburg district most of the steel mills are over-sold for the second quarter, premiums are being paid for early delivery. Sheets, 28 gauge, are quoted at 4 dollars to 4 dollars 25 cents, and galvanised at 5 dollars to 5 dollars 50 cents. Tin plates are quoted up to 6 dollars per base box. The price of hot and cold rolled strip has been advanced 5 dollars per ton. Bolts and nuts have been advanced 10 per cent., and bar iron 2 dollars per ton to 3 dollars 10 cents to 4 dollars 85 cents, according to quality. Wire nails are quoted at 3 dollars, and shapes and plates command 2 dollars 35 cents to 2 dollars 75 cents.

Railway Orders.

The railways are placing further large orders for cars, and the Chicago mills report important inquiries for rails.

Important American Steel Merger.—The Bethlehem Steel Corporation on March 30 formally took over the Midvale Steel Co., which included the Cambria steel properties. The original Midvale Steel Company, of Nicetown, Philadelphia, has been reconstituted as a separate institution.

Belgian Rails for Hull.

The Corporation of Hull has decided to purchase 1,000 tons of tram rails from Belgium, in addition to the larger contract placed in that country recently. The prices quoted were £11 1s. per ton for rails, £12 10s. per ton for fish plates, and £13 2s. 6d. per ton for sole plates, representing an increase of £2 2s. 6d. per ton upon the original contract.

Austria.

The pig iron production in the Austrian Republic in 1922 was 323,172 tons, compared with 224,000 tons in 1921. The production of steel was 480,731 tons against 294,000 tons in 1921.

Timber and Building Materials.

Business in the timber trade is quite satisfactory, and, in consequence of the increasing building operations, is expected to become quite brisk very shortly. Stocks are fair, with the exception of scantlings, in which in certain sizes there is no surplus. Another month or so should, it is stated, see timber merchants well supplied in all lines. The price of bricks remains the same, although, as previously reported, the demand is now greater than for a long time. Builders are now tendering for some big jobs, and increased activity is expected within the next few weeks.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3⅞d.; floorings, 6d. to 6¼d.; ceilings, 4d. to 4½d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d. to 9d., very firm. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, in Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s., at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d. to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft.; 3-ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12in., 6s.; 15in, 7s. 6d.; 18in., 9s.; dry red oxide, 14s. per 100lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

Second-hand Iron and Timber Yards.

These report business as very quiet, but the tendency of second-hand materials is to harden. Ruling prices to-day are: For iron, 7d.; timber, 9d.

London Metal Market Quotations, May 7.

Standard copper, £70 12s. 6d. cash, £71 7s. 6d. three months; electrolytic copper, £79 10s., seller's option of shape and port of delivery, £80 buyer's option; copper bars, £80; standard tin, £210 7s. 6d. cash, £210 2s. 6d. three months; foreign lead, £25 prompt, £24 17s. 6d. forward; quicksilver, £10 2s. 6d.; bar silver, 32⅛d.; bar gold, 89s. 1d. per ounce.

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PIPE WRENCH

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Because the jaws open endwise the "LITTLE GIANT" Wrench will reach and turn pipe, nuts, rod, etc., in places ordinarily inaccessible.

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The Utilitarian Value of Geological Investigation Illustrated by the Geology of South African Coals--II.

Anniversary Address by the President, C. J. Gray, A.R.S.M., read at the Annual Meeting of the Geological Society of South Africa.

It may be fairly well known that the Ecca coal seams of Natal are represented by extensions and outliers in the inland parts of Zululand, but comparatively few, I think, realise what remarkable series of seams occur near the coast and what interesting problems remain to be solved in connection with them. There is some information in Anderson's report of the Natal Geological Survey and some more in a paper which I read before the South African Association for Advancement of Science in 1907. Du Toit and others have dealt with the seams briefly, but the bulk of the published information is buried in the various Blue Books containing the Zululand and Natal Mines Department reports from 1894 to 1910. Traveling northward from the Tugela River, in that coast region, we met with coal in succession near Ginginhlovu, Nhlalala Hill, between Eshowe and Mtunzini, near Mtunzini (formerly Umlalazi), Okula Valley, near Empangeni, Ntambanana, between the White and Black Umfolosi Rivers, and near Somkele.

Near Ginginhlovu a very anthracitic seam, 4 ft. thick, outcrops and has been passed through at a shallow depth in a borehole. Much boring done in 1903 and 1904 failed to prove other seams, and so much igneous rock was found in the boreholes as to indicate that it is unlikely that coal of value occurs. Points of geological interest which were noted were that in one borehole 411 feet of shales were pierced above the typical coal measure sandstones, and that much of the igneous rock was green, partially devitrified, basal glass sometimes containing amygdules and sometimes such numbers of black spherulites that it passed into a black rock consisting of closely aggregated spherulites. The problems arise as to whether the overlying shale is Du Toit's Upper Ecca shale, whether the coal is Middle Ecca coal, and why the igneous rocks are so very different from those found elsewhere in coal measures in Natal or Zululand.

In the Nhlalala hill there are a few thin seams. The analysis of a fourteen-inch seam was: Moisture, 1·2; fixed carbon, 73·5; volatile hydrocarbon, 16·1; and ash, 9·2.

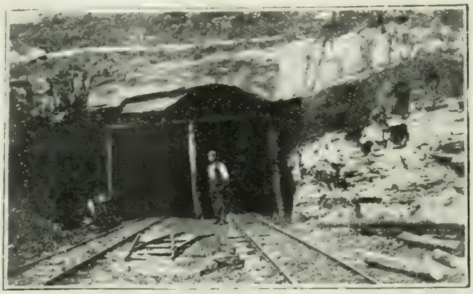
Between the gneiss of the Ungoya mountains and the coast south of the Umlalazi river we find a most interesting collection of coal seams with problems which remain to be solved. North of the Ibade, which is a small stream tributary to the Umlalazi, there are many outcrops of numerous thick and thin seams. There are thin well-defined seams, and thick composite seams of coal and shale, a remarkable feature of one of the thick seams being the way in which it split up into three or four seams separated by parrings feet thick in a few feet distance.

The seams are mostly bituminous, some are of reasonably clean coal and some of very dirty coal. Small pieces of cannel coal are or were found among the grass roots below the flood level along the Ibade stream, but their place of origin is unknown. In the north-western portion of the field the strike is about 75 deg. west of north (magnetic) and there is a slight northward dip. In the north-eastern portion the strata are much broken and strikes and dips vary, but the dip is generally to the south-east. South of the Ibade, and presumably beyond a line of faulting, the strata are comparatively undisturbed and have a steady strike of 47 deg. east of north and dip 10 deg. north-west, though farther southward the dip steepens. On that portion of the field boreholes have shown a remarkable series of coal seams distributed through a considerable thickness of strata. They are mostly thin and all more or less anthracitic, but the latter character may be due to the numerous interbedded sheets of igneous rock. In one borehole a seam of graphite 8 ft. 3 in. thick was struck at a depth of 934 ft. in contact with igneous rock which had obviously altered a coal seam into graphite. That seam was subsequently found away from igneous rock, and was traced to the outcrop where the coal is semi-bituminous in character. It is so far as known the lowest seam. The igneous rocks met with in the boreholes differ markedly from those found at Ginginhlovu only a few miles away. They are basalts and dolerites generally resembling those on the Klip River coal field in Natal, but differing in some respects, as for instance in that they are amygdaloidal. It may be interesting to note that in one borehole on the north-western portion of the field 8 ft. of limestone was passed through immediately above igneous rock, but other boreholes showed the limestones not to be extensive. It can be seen from what has been said that careful stratigraphical work with examination of such palaeobotanical remains as are to be found, is necessary if the problems of the Umlalazi field are to be unravelled. We ought to know with certainty how all the coal seams are to be placed in geological sequence, whether they are Middle Ecca, Beaufort or Molteno seams, though the latter is unlikely, and how their variations in character are related to their geological sequence. Possibly careful study and work based on that study may yet lead to discovery of areas of valuable coal in the locality.

Further northward, just beyond Empangeni, there is a patch of coal measures containing a thin seam in the valley of the Okula stream, but that area is practically unproved.

Inland from Empangeni we have the Ntambanana and Inseleni coal field. One 6 ft. to 7 ft. seam of somewhat anthracitic and dirty coal outcrops in numerous places. It dips to the south-east at an angle of three or four degrees. In boreholes on lower ground to the south or dip side of the outcrops, six thin seams have been found, but their geological horizons in relation to the thicker outcropping seam are not known. The boreholes, though one of them is 1,074 ft. deep, have not passed through the coal measures, using that term for the alternating sandstones and shales, but, away to the northward from the outcrops, underlying shales and then dwyka are met with. The sheets and dykes of igneous rock in the Ntambanana boreholes are basalts similar to those on the Klip river coalfield in Natal. The shale forming the floor of the Ntambanana seam contains an abundance of excellent impressions of plants. Study of these, with detailed examination of the sequence of strata back to the dwyka, should definitely fix the age of the Ntambanana coal, give an indication as to whether better coal is to be looked for in the neighbourhood, and help to solve the problems of the other coal areas on the Zululand coast.

(To be continued.)



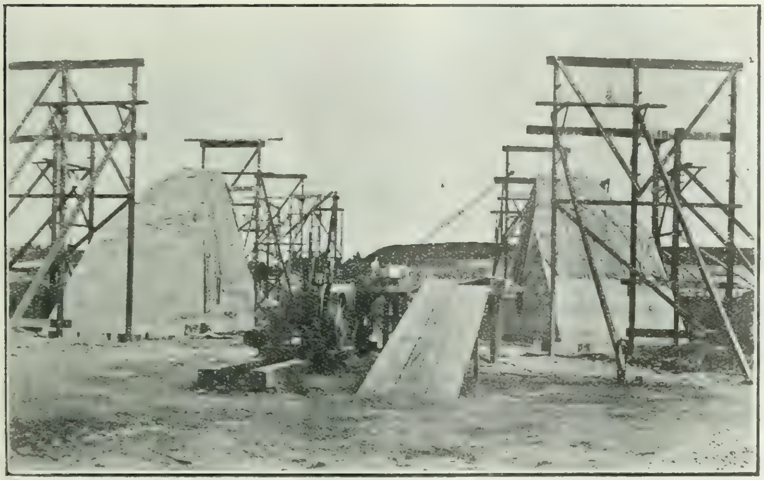
A Seam at the Buffalo Coal Mine, Vryheid.

The Pegging at Batavia—Power Stations at Witbank & Colenso—Robert Williams and Katanga—Company Meetings; Important Speeches.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL SATURDAY, MAY 19 1923 No. 1651

Scenes at the New Modder.



Preliminary Work at the New Circular Shaft.

Mr. Stuart Martin, Consulting Engineer of the New Modder.

VIEWS OF PORTIONS OF THE SURFACE WORKS OF THE NEW MODDERFONTEIN GOLD MINES.

The New Modderfontein Company is now engaged on sinking a new circular shaft in the south-western portion of its claim area. This shaft will be sunk to a depth of 3.000 feet.

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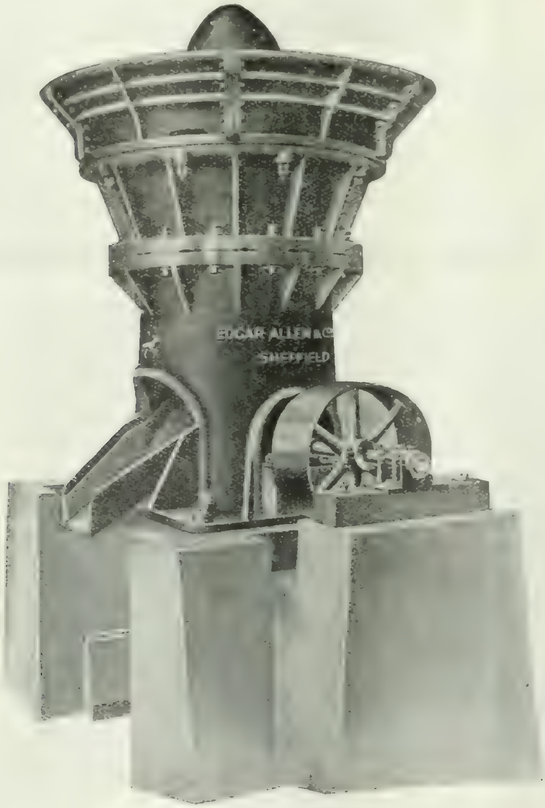

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Mine Lives : Points for Investors.

PERIOD OF PRODUCTIVITY DETERMINED BY REEF DISCLOSURES AND COSTS—SOME RECENT CALCULATIONS—PROPERTIES WHERE THE OIL IS BURNING LOW—DIFFICULTY OF MAKING ESTIMATES FOR MINES WITH LARGE UNDEVELOPED AREAS.

So often are enquiries regarding the "lives" of mines received at this office that a few remarks on the subject may not be amiss. We shall, too, endeavour to give a few estimates regarding the probable duration of productive operations at certain mines which are approaching exhaustion, and in respect of which therefore it is possible to give fairly definite calculations.

Variable Factors.

In the first place it should be made clear that the factor of life in respect of any mine is a variable one, depending in large degree upon the rate of working expenditure. In all mines there are substantial tonnages of low grade ores as well as tonnages of comparatively high grade rock. If working costs are maintained at a level which is materially above the recoverable value of the low grade ores, then the period of productive activity will necessarily be restricted, and will be limited to the high grade tonnage. Similarly if working expenses can be reduced and maintained at a lower level the life will correspondingly be prolonged. This statement broadly represents the position, although it may be qualified to a certain degree by other conditions, such as those which relate to the averaging of the ores, that is to say, mixing the low and medium and high grade ores together, and also in regard to considerations of capital expenditure which may be necessary for attacking low grade areas.

Other Considerations.

The life may be shortened or, in fact, be quite suddenly terminated (as was the case at the Village Main Reef, by a large fall or falls of ground, and on the other hand, it may be prolonged by the discovery of isolated tonnages and blocks of pay ore during reclamation operations.

It should be clear from the foregoing that the life of a mine is by no means an easy matter to arrive at, and the difficulty of making such an estimate, and the liability of error, increase more or less proportionately with the size of the tonnages not yet worked out.

In other words, it is obviously easier to estimate the period of productivity in respect of a mine which has almost got to the end of its tether than it is to estimate the life of a proposition which has 20 years or more to run, for it is quite conceivable that within the next two decades there may be a complete change in the economies of the Transvaal mining industry.

One of the Long Life Ventures of the Rand; a Scene at Government Areas.

Some Recent Estimates.

Subject to these qualifications then, it may be pointed out that the following mines probably have a very limited lease of life, that is to say, not more than three or four years to look forward to: Ferreira Deep, Geldenhuis Deep, New Goch, New Primrose, Witwatersrand, and Wolhuter. The New Unified and Knight Central are completing liquidation arrangements, and at the Robinson the tonnage milled is declining on account of the diminishing reserves in the mine.

The latest quarterly report of this Company states that as a result of an appeal made to the Government Mining Engineer, the injunction against the mining of the No. 2 Shaft pillars between the sixth and fourteenth levels imposed by the Inspector of Mines, Johannesburg, of which fact shareholders were advised through the Press, was withdrawn on April 11. Mining has not resumed, however, owing to the Municipality having obtained a temporary interdict on April 20. On May 8 judgment in this matter was given in favour of the Company, and the interdict withdrawn. Operations in the area in question have accordingly been re-started.

The Municipality has notified its intention of instituting an action for declaration of rights, interdict, damages, etc.

The future of the East Rand Proprietary is problematical, but obviously if this proposition was compelled to close down the lives of mines in the vicinity would be jeopardised, unless special arrangements were come to with the object of keeping pumping in progress.

Mines with long Lives.

The lives of many Witwatersrand mines have at one time and another been variously estimated.

The life of the Crown Mines has, for instance, been calculated to be from 17 to 25 years; that of the City Deep 28 years, and of Government Areas 25 years. The life of the Village Deep has, for the purposes of Profits Tax, been estimated at eight years, and as to the New Modderfontein and Robinson Deep, detailed calculations as to claims intact recently have been given.

The duration of the period of milling operations at these and other mines must, of course, depend in large degree upon development results and the cost of working, and since these factors are incapable of any very close determination it must be obvious that estimates as to life, particularly in the case of mines with large undeveloped claim areas, should be accepted with a good deal of reserve.

PUBLICATIONS RECEIVED.

"African World Annual." The 20th Annual (1922-23) Edition of our valued London contemporary, the "African World," is now to hand, and we should like to congratulate the editor-in-chief, Mr. Leo. Weinthal, and all associated with him in the production of this number, upon the high standard which it sets. It is extremely interesting, beautifully produced and copiously illustrated. Comprehensive in its survey, it is an invaluable guide to the whole of the African Continent.

"Pioneer Railway Engineering." In two volumes. B. H. Stringer, B.A., A.M.I.C.E. Published at 12s. 6d. net, by H. F. & G. Witherby, 326 High Holborn, London.

A complete and indispensable text book containing practically every constructive and economic detail required by the pioneer railway engineer, together with those variations in practice necessitated by climatic considerations outside Europe.

The scope is very wide, detailed and thorough, each section of the subject being explained by plans, diagrams or tables, and is set out as follows: Construction, Transport, Plant and Machinery; Banks, Cuttings, Setting out and Shrinkage; Rock Blasting; Temporary Bridge Building; Culvert and Bridge Construction, and Quantities for the same; Masonry, Footing and Piles; Girder Erection; Lifting Power of Blocks; Tackle Weights and Breaking Strains; Track Laying and Ballasting Specifications; Points, Crossings, and their Maintenance; Construction of Points and Crossings; Permanent Way Standards and Savings; Location and Survey; Building Construction, Size, Bearing Power of Soils, Walls and Partitions; Painter's, Plasterer's and Carpenter's Work; Roofing Materials; Fences and Gates; Smoke-Jacks and Engine Pits; Coolie Quarters; Road Construction; Water Stations; Filter Beds; Wells, Piping and Pressure; Sanitation; Construction of Stations, Signal Cabins and Signals; Concrete Beams, Slabs, Columns, Sheer, Adhesion of Elements.

SUCCESS OF THE CROWE PROCESS.

The annual report of the [illegible] Mines Company for the year 1922 states:

The Crowe Vacuum Equipment continued throughout the year to demonstrate its value in decreasing zinc and cyanide consumption, and in lowering refining costs and maintaining more uniform extraction. These factors are brought out in the following table. The consumption of zinc and cyanide and refining costs are per ton of ore milled.

	1922	1921	1915-20	Decrease, 1922 over Average amount 1915-20 P. ton.	P. cent
Zinc (pounds)	0.80	0.92	1.23	0.43	34.1
Cyanide (based on 97% NaCN)	1.34	1.61	1.82	0.48	26.3
Refining cost (dollars)	0.071	0.086	0.106	0.035	33.1
Recovery (per cent)	90.91	90.73	88.17	—	2.74*

*Increase.

The Crowe Vacuum Equipment was in operation throughout all of the years 1921 and 1922. The Vacuum Equipment cannot be credited so much with actually increasing extraction as it can with prevention of periods of low extraction. Occasionally, when air is present in mill solutions, high alkalinity interferes with precipitation, and to improve precipitation the alkalinity is lowered, sometimes resulting in lower extraction. With air removed from the solution high alkalinity has never interfered with precipitation and the alkalinity can be maintained at the point best suited to maximum extraction.

The above figures represent the following saving per ton of ore milled: Zince shavings, .43 lbs. at .14 dollars, equal .060 dollars; sodium cyanide, .48 lbs. at .02 dollars, equal .096 dollars; refining, equals .035 dollars; increased extraction, 10.48 dollars x 2.74 per cent., equals .287 dollars; total .478 dollars. Zinc box precipitation is used at this mill, and the Crowe Vaccum Process for removing oxygen from solutions was installed during November, 1920. These results constitute a remarkable record, and should be of interest to anyone precipitating cyanide solutions. Whether used in connection with the Merrill Zinc Dust Precipitation Process or with zinc shavings, the Crowe Process for removing oxygen from cyanide solutions has accomplished splendid economies. The owners have now sold upwards of 75 installations throughout the world, and in every instance the total installed cost, including all royalty, has been returned from savings in from six to eighteen months' operation, the average being well under twelve months. As the manager of one large mill in Colorado has stated, "It gives us 'trace' barrens, and is the most important single factor in steadying the operation of our mill."

CAM & MOTOR GOLD MINING CO. (1919), LTD.

At the request of certain shareholders, the directors recently gave permission to Mr. Henry H. Knox, M.I.M.M., to visit the property in Rhodesia. Mr. Knox has now returned to England and reported to his principals that he was given every opportunity to inspect the mine and review the records, devoting special attention to the assays. As a result he is able to attest the conservatism of the statements rendered by the management at the mine.

DESIGNS —— DRAWINGS —— TRACINGS

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The Batavia Gold Rush.

HOW THE PEGGING SYNDICATES WERE FORMED—NO HITCH IN THE PROCEEDINGS—WAS THE PEGGING LEGAL ?

(From our own Representative on the Gold Fields.)

The great day has come and gone. Over 2,000 licences to peg were taken out by interested persons and practically every claim has been staked.

The whole area together, Batavia and Kameelboom, comprised some 2,200 claims on the reef. It has been computed that this area gave about two claims to each applicant on an average.

Everything passed over very well, there was no hitch in the arrangements, and within 3 hours of the crack of the rifle shot all the claims were pegged out.

The Syndicate Idea.

Prior to the date of pegging the thought in the minds of most of the people present was, "we must all rush for the ground and get in our pegs where we can."

This did not happen chiefly for this reason. A number of syndicates had been formed to peg areas on the new gold fields, and these had arranged for pegging off blocks of ground which would constitute definite blocks of claims all following consecutively and thus constituting possible mining areas. On being approached by some of the peggers Mr. Jack, the Mining Commissioner, expressed approval of the syndicate idea, and this was carried out on the spot. There was a Bechuanaland syndicate, one each for Pretoria, Rustenburg, Marico, Zeerust, up to eleven in all, and practically the whole available area was taken up by the eleven syndicates to the complete exclusion of all persons outside themselves.

Previously gangs of volunteers went out on to the ground and made a rough demarcation of the area. There were 99 outcrop claims available and the others worked as deep level claims. Each syndicate was given 9 outcrop claims and a ratio of the deep level claims, according to the number of men in the syndicate. Since the ground was practically pegged on Monday by the volunteer party, all that remained for the syndicates to do on Tuesday was to be on the ground allotted to them and as soon as the rifle shot was heard to put in their pegs, and so it was.

The arrangement of the particular areas allotted to the syndicates was by ballot. The blocks were alphabetically set out from A to K inclusive and were ballotted for by the representatives of the eleven syndicates, and each one took the block found on his ballot paper.

There was, therefore, no rush and no friction, except complaints from those who were not in any syndicate; and the whole area is now in the hands of the various groups.

The Legal Aspect.

However, the legal aspect of the matter still remains to be dealt with and this is, "Has the Mining Commissioner the right to practically prevent individual pegging of proclaimed ground?" It is true that he expressly stated that no one was to be prevented from pegging where he could. In view, however, of the fact that the Commissioner had allowed peggers to stake out the whole of the area in blocks before the day of pegging and that he had allowed balloting for these blocks, not as individual claims but as blocks of ground, and that he had permitted the whole available area to be divided up between eleven syndicates, practically made it impossible for anyone not a member of a syndicate to peg out any claims on the ground. Doubtless the Commissioner has large discretionary powers under the Gold Law as to how pegging shall be done, but unless the whole previous intent of the Act is to be frustrated in future it should be made impossible for groups of men to peg out mining ground to the complete exclusion, by previous arrangement of the ground into definite areas, of individual peggers. The matter should certainly be made public in the interest of the community, since, if such arrangements are possible, it only remains for associations of men to agree to take out large blocks of claims, to form one or more syndicates, and to previously delimitate the peggable area and hence to walk on to the ground and put in their pegs without fearing any opposing peggers, or without even the risk of opposing peggers.

Frankly, the Batavia pegging was a farce, and it is extremely doubtful if it is legal in view of the provisions in the Gold Law. It cannot be too strongly emphasised that the practical result of the action of the Mining Commissioner was to allow pegging by bodies of men, who were actually on the claims they intended to peg and which had been pegged the previous day for all practical purposes, and this to the complete exclusion of any individual outside the syndicates. What really happened was this. Each syndicate, taking the letter obtained by ballot, placed its men on the claims already having the letter on a prominent peg; they held the pegs in their hands, each one at his proper post. When the rifle was fired at nine o'clock, the man simply put in his peg and the claim became the syndicate's; there was not the slightest hope for any outsider to get one of these claims, and, as a matter of fact, no outsider did get one.

It is to be hoped that the Minister for Mines will deal with the matter, and either confirm the innovation for future guidance, or else declare the pegging ultra vires the law, and proclaim the ground open for pegging.

Crushing Samples for Panning on the New Gold Fields.

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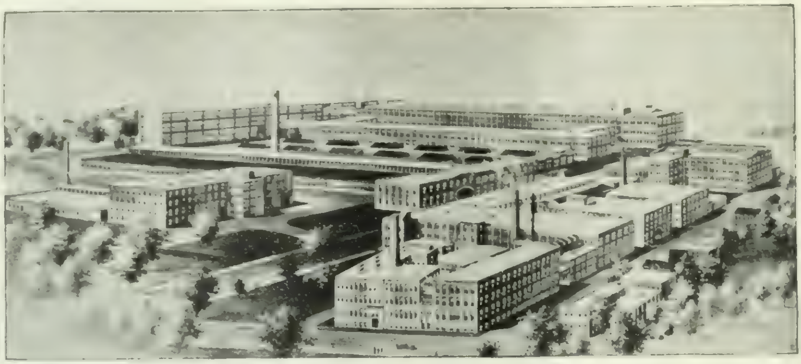

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The Lure of the Diamond.

THE ROMANCE OF SOUTH AFRICA'S GREAT GEM INDUSTRY—HOW FORTUNES HAVE BEEN AMASSED—A BIG MINE IN BECHUANALAND ?

(By Christian Zinn.)

South Africa has frequently been described as the land of surprises, and when one looks back on years of experience one can conjure up from records, indelibly impressed in one's receptive memory cells, surprises of many kinds, some that delight in extremis, and others tinged with the sorrow of Hades. It is indeed a country of "ups" and "downs," and numerous are the ruined lives owing to the sudden rises to positions of fortune and the equally sudden descents to the depths of poverty and misery.

In this eloquent passage, Mr. Gardener Williams, whose knowledge of everything that appertains to diamonds is unsurpassed, refers to the first discovery of a rough diamond in South Africa in his able and fascinating work "The Diamond Mines of South Africa."

Of this one little stone, which bore the destinies of South Africa in its heart, the late Dr. W. G. Atherstone, F.G.S., who first identified it as a diamond, said at a meeting of the S.A. Geological Society:—

The Lure of the Diamond—A Scene at a Typical South African Diamond Mine.

"A child picking up a shining pebble for a plaything from the ground edging a river—was this sport of blind chance the revelation of the marvellous diamond fields of Africa? In narrow fact, yes; but in a wider, truer range of view, this discovery was the crown that sooner or later must reward the search of daring adventurers and the push of stubborn pioneers into the dark heart of the Continent. The ardour and the toil and the courage and the blood of generations of explorers were spent before it was possible for a little child to play pitch and toss with the pebbles of the Orange River and clasp a rough diamond in his heedless hand."

"Incredible as it was deemed at the time, my story of the small rounded river stone, which fell out of the unsealed letter placed in my hands by the post-boy, has since proved to be the key that has unlocked the vast underground wealth of South Africa.

"The story I have now to tell of its birthplace and subsequent history will, I know, appear still more incredible, as fabulous indeed as was that of Sinbad, the Arabian voyager, who, with the talisman and the magic lamp of Aladdin the Seer, unlocked the caverns of Africa's fairyland, and viewed in prophetic vision the vast stores of buried treasure, gold, diamonds and other gems, just as we see them now with our magic electric lamp a thousand feet down in the dark recesses of the extinct volcano, yielding tributes of the precious gems on earth."

Some time since, according to Mr Gardner Williams: "The possibility of Kimberley diamonds was flatly denied by a professional engineer who came from England to report."

But the romance of diamond discovery did not stop at Kimberley, nor are they yet exhausted. Subsequent discoveries proved that, lying beneath the Great Central Plateau (the Karroo), further treasures of diamonds awaited the persevering and fortunate seeker. For as one single diamond, found by a babe on the "Colesberg Kopje," indicated the rich Kimberley mine, so another single diamond, picked up by Mr de Klerk on the line of the Jagersfontein Spruit, led to the discovery of that great "pipe." Then, for a long time, the existence of diamond mines at any great distance from Kimberley was ridiculed. Yet (according to Wagner's "Diamonds of South Africa"), not a generation had passed when Mr (now Sir Thomas) Cullinan, by careful prospecting, proved the heavy diamondiferous concentrates found in one of the minor tributaries of the Pienaar's River, to emanate from a depression in the foothills in the northern portion of the farm Elandsfontein. He at once surmised that the depression must contain the Kimberlite occurrences whence the alluvium had been derived, but was flatly refused permission to test the area in question by the owner of the farm, a certain Joachim Prinsloo. There was no option but to purchase the freehold, for which £55,000 was demanded, and to realise this sum, Mr (now Sir) Thomas Cullinan formed "The Premier Diamond Mining Company, Limited."

On such slight indications were Sir Thomas Cullinan's faith and foresight rewarded by the discovery of the great Premier Mine.

The story of the discovery of the alluvial deposits of diamonds in South-West Africa, in 1908, is as romantic as the others. In this case a "boy," who had previously worked in the Kimberley mines, and who was at the time working on the construction of the railway to Aus, picked up some of the glittering stones lying strewn on the sand over which thousands of men, many of them old diamond prospectors and miners, had walked or driven wagons. The "boy's" excited statement that the stones were diamonds was laughed at. But, persisting in his opinion, he persuaded one of the German gangers—one Stauch—to get the stones tested. The test proved them to be diamonds. So started the sensational discoveries of the immense deposits of diamonds in South-West Africa, culminating in the astonishing wealth of Pomona, where the famous "Valley of Diamonds" dazzled the eyes of the first explorers, who scooped up diamonds in handfuls.

Blanks and Prizes.

To those who have studied the question of diamondiferous properties for any considerable time, it must have occurred at some time or other as very remarkable that there should be such a large number of properties scattered all over the country containing all the characteristics of diamond-bearing pipes without the presence of the precious gem having been proved. The reason for this may be that the usual limited means of persons or syndicates tackling this business which bristles with unexpected difficulties, as a rule do not permit of more being done than sinking shafts deep enough to ascertain the depth of the yellow ground on the pipes (from 50 to 60 feet) and to strike the blue ground, whereas, judging from analogy, the mine level is deeper. As a result, these discoveries have usually been dubbed as "blind pipes." It is a fact worth remembering, however, that there is no real mine in the Union of South Africa, where there is not a cluster of "blind pipes."

The following figures prove this fact as regards existing diamond groups:—

1 Kimberley group, a cluster of 19 pipes, 4 being diamond bearing.
2 Koffyfontein group, a cluster of 17 pipes, 1 being diamond bearing.
3 Jagersfontein group, a cluster of 8 pipes, 1 being diamond bearing.
4 Boshoff group, a cluster of 11 pipes, 3 being diamond bearing.
5 Kroonstad group, a cluster of 9 pipes, 1 being diamond bearing.
6 Pretoria (Premier), a cluster of 12 pipes, 1 being diamond bearing.

It is indeed strange how movements in search of precious stones and minerals seem to pass over this country at various times in waves. Everything seems to remain quiet in this respect for a long time, and suddenly the wave makes its appearance and decided steps are taken in various directions. This movement dates back very many years, and at present there is ample evidence of such a wave being with us.

One has only to look at the number of fields that have lately been thrown open to the public, and when one visits these places it is not only the townsman who rushes there for want of employment, but it is also the large landowner, probably reduced to straitened circumstances by repeated drawbacks in the shape of pests such as locusts, bluetong, horse sickness, etc.

The Newer Fields.

Great activity is once more observable in the north of the Cape Province.

Not very many miles from Kimberley, Postmasburg has been having its share of attention for some years past, and there is evidence of equally good, if not better, prospects a little further north between Kuruman and Vryburg. Theorists have not always been correct in their predictions regarding South African occurrences, and while some engineers have held the opinion that the diamondiferous occurrences in Bechuanaland are due to deposits washed down by ancient rivers, recent investigations have a tendency to dispel these earlier conclusions, and it has been fairly well established of late by qualified engineers that there is a likelihood of the existence of one or more diamond-bearing pipes in Bechuanaland, richer than any ever before discovered in this land of surprises.

In connection with the discovery of diamonds in this particular area of late, these precious gems have been found to be accompanied by other valuable stones such as sapphires, opals, amethyst and topaz. In this country attention has been given mainly to diamonds, and the value of the other stones mentioned above has been perhaps badly neglected. There is not the slightest doubt that the satellites accompanying diamonds can also be turned to good account.

Most mining operations must, of course, be looked upon in the form of speculation. In the case of diamonds, the prize of success is fabulously great.

The production of the soil above and of the rock below are both speculative in the sense that no human power can control the forces of Nature. We can only calculate on probabilities, and it is a safe rule for the investor to take into serious consideration such probabilities, and in the interests of the country and himself, to invest his money where possible in concerns showing reasonable prospects of success. In the case of diamond mining, if expectations are realised, the returns to shareholders are generally enormous, as has been proved in the case of original shareholders in such companies as "De Beers," "Premier," "Jagersfontein," "Pomona," and "Kolonial Bergbau." The latter company paid for the years 1910, 1911, 1912, and 1913 dividends amounting to 2,400, 2,500, 3,800, and 2,500 per cent. respectively.

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Katanga's Wonderful Development.

ELOQUENT REVIEW BY MR. ROBERT WILLIAMS—IMMENSE RICHES OF THE TERRITORY—40.000.000 TONS OF COPPER—THE ENTRANCING STORY OF KATANGA RETOLD—HIS EXCELLENCY'S TRIBUTE TO MR. WILLIAMS'S ENERGY AND FORESIGHT.

The "S.A. Mining and Engineering Journal," more than any other periodical published in South Africa, has consistently kept its readers and the public generally well advised as to the progress of mineral developments in the Katanga. The interests controlled by the Union Minière, next to the Witwatersrand, constitute the biggest enterprise in Africa. They were visited and very fully reported on by a Special Commissioner of the "Journal" a few months ago, and plans are now under consideration for the preparation of further exclusive articles on the subject of Congo Copper and other minerals. It is important to note that Mr. Robert Williams, who, like his great master, Rhodes, thinks in terms of Continents, has recently made a lengthy survey of the great mineral field, and from the following summary of the speeches made at a banquet given in honour of Mr. Williams at Elisabethville a few days ago, readers will be able to appreciate the immensity of the task the Industrial Kings of Central Africa set themselves and how successfully they have grappled with the problem in all its varied and complex difficulties.

Mr. Robert Williams, who passed through Bulawayo last week on his way to Kimberley, the Cape and Lobito Bay, which he is to visit before returning home, was given a farewell banquet at Elisabethville on the conclusion of his tour of the Katanga. His Excellency the Governor of the Katanga presided over a large attendance.

Mining Industry.

Mr. Williams said: When I last visited Elisabethville, it was to inaugurate the smelting operations. When the molten stream began to flow I turned to a companion and remarked, "This is the beginning of the stream that is to completely revolutionise Central Africa." To grasp the meaning of this industry and its future the factors which have been the cause of success so far and which will make for greater success in the future, one must look back as well as forward. One must bring one's experience gained in the other industries further south. This is the fourth mining industry in Africa I have grown up with, and I venture to say that this one will be the greatest of them all; but only if the experience gained at the other three is profited by. What was that experience?

First that a great industry can only be made a success by encouraging every adjoining country as well as your own country, to develop everything your industry may require, whether it is a railway, a coal mine, a sulphur mine, beef or food of any sort. You will require them all as your own country, with its rapidly developing industries, will never be able to supply the needs of this great industry as I picture it in the future. Indeed, this industry would not be so far advanced as it is to-day had not Rhodes pushed on his Cape to Cairo railway, and Wankie Mines, from which your coke comes, would not be in existence to-day for the same reason.

Secondly, you will require to encourage from now onwards all natives from your own country and from surrounding countries and to gradually acclimatise them to this country as the industry grows in order to have the 60,000 or 100,000 natives this industry will ultimately require. You will never be able to depend on any one source of native labour. Most of your sources of native labour will be required for the rapid development of railways and other industries in your own country. It is also quite certain this industry cannot depend on one railway as it does at present.

Thirdly, the knowledge gained in the goldfields of their geological occurrence was necessary in order to guide my staff and myself to this country and its great copper belt. In fact, when Cecil Rhodes asked me to find mineral wealth to assist his Cape to Cairo railway north, I looked at the map of Africa and saw a great divide forming the head-waters of the Congo and Zambesi Rivers and realised that divide was really a duplication of the divide which forms the head-waters of the Limpopo and Orange Rivers further south and which constitutes to-day the Rand goldfields.

Mr. Robert Williams, who has recently been touring Katanga.

If it was a great effort to expose the mineral wealth of these mines, situated as they are over 1,000 miles from any seaport or railway terminus, it was a still greater effort to develop, work and finance them. Railways had to be built, large installations had to be erected, villages created with water supplies over 250 miles of a continuous reef. Native labour had to be organised and hospitals for white and black staffs had to be erected. Water power had to be investigated and great epidemics had to be fought. Millions had to be found for this purpose, and these millions were found chiefly as the result of the efforts of my respected colleague, Monsieur Jean Jadot, President of the Union Minière Company, and myself.

These millions had to be raised under great difficulties. At first it was believed that the discoveries existed only in my imagination. One man stood up in the Senate in Brussels, in 1911, and stated that the so-called wealth of Katanga was all bluff. Then the Great War came and increased our difficulties. Then the mines were said to be exhausted, or nearly so; I knew this was nonsense.

New Discoveries.

Mr. George Grey reported the discovery of 50 or 60 separate mines and described them as being of the same geological formation, and having a north-westerly and south-easterly strike and extending over 200 miles of country. I replied to George Grey, pointing out to him that the so-called mines had probably originally been glaring green malachite outcrops which had attracted the native, who had probably passed from one to another as he exhausted them, and that he had never required to explore for extensions underground; that in all probability what he had discovered was one continuous reef which would probably be found as rich underground where it had no outcrop, as where the natives had worked it. This view was confirmed by Mr. Farrell, the first American mining engineer I sent out to report on these deposits. It was further confirmed by the discovery of ore at Kambove wests and at [illegible] Mine, within the last few months, where 5,000,000 tons of ore, containing 500,000 tons of copper, has been opened up by drilling. More drilling is proving that mine to be really an extension of the Star Mine.

At Luishia the extension of that mine has been worked for miles on either side. But what shows the continuity of this great copper belt most of all is the western section of it, which I had never seen before. I travelled over 120 miles of it last week. Unlike the eastern section, where the wealth is mostly under surface level, that of the western section is chiefly above surface level. It stands up in bold hills, the geological formation of which is the same as the eastern section, with the same ore, with slight variations as to value.

Hills of Copper.

You can stand at Ruwe Mine, as I did, and see these bare hills of copper standing out of a sea of forest country, marking the line of the great coper reef, with faults here and there, right away to Fungurume. I motored along the Fungurume Mine and its extension for about 20 miles. The highest point of this range is 1,000 feet above the local river level.

I went over most of these hills of copper accompanied by Mons. Barzin, who knew them all, and each and every one had been proved by tunnels, surface trenches and drills. In one mile of the 20 miles, at Fungurume, 9,000,000 tons of ore had been proved. At Musunoi there is a group of mines within 1,100 miles of the sea, in which millions of tons of ore have already been proved to exist. At Ruwe Mine £100,000 in gold has already been extracted. Gold, platinum, palladium, vanadium and copper exist; besides these metals the Union Minière has already proved the existence of large supplies of cobalt and uranium ores, the latter containing enough radium for the supply of the world for a considerable time.

Forty Million Tons.

About 10 miles out of 250 miles of this copper belt has given a development of 50,000,000 tons of ore containing about 4,000,000 tons of metallic copper. These ten miles represent operating mines and proved bodies of ore over the whole 250 miles. If ten miles has given 4,000,000 tons of metal I think you will agree with me that 40,000,000 tons of copper is a very conservative estimate of the whole 250 miles. I look upon the present output of the Lubumbashi smelters of 50,000 tons per annum as the beginning of great things. I wrote King Leopold in 1902 that I believed this copper belt would ultimately produce 1,000 tons of copper per day if everything that makes for economical working were brought to bear, and particularly if we got cheap transport to the coast and to Europe, which I saw would be the great item of expense. Since I have visited the copper belt this time, I am more than ever confirmed in the views I expressed in that letter.

I am aware that there are many years of high-grade smelting ore in sight and probably many millions of tons of that ore will still be revealed, but there are endless millions of tons requiring more economical treatment. The leaching process, now proved a complete success by Mr. Wheeler and his assistants, can deal with all these ores. The metallurgical treatment of these ores has now been solved.

All Doubts Vanish.

When I think of the years of doubt that have been cast on this industry, it makes me laugh. First, there were doubts as to the existence of the ore, then doubts as to whether it could be smelted, while natives were doing it all the time in front of our faces, and had been doing it for centuries by the same process that we are now using. They washed the silica out of the ore in the river with wicker baskets, and we are doing it with the concentrator. Our leaching process is the same as that used at American mines with very slight variations.

I believe that the real policy for this country to pursue is to go ahead with all processes and try to perfect them all as we proceed. In my opinion there is an endless quantity of ore in this great copper belt, suitable for all these processes. By such a plan this industry could never be held up by a strike or other stoppage of work at the mines which supply us with sulphur, with coal or with other fuel. If there was a strike at one point we could go on with the other supplies, and the same thing applies to the railway. Every railway should be encouraged to come to Katanga, whether from the north, south, east or west. There will be work for them all if the industry is opened up to its greatest output.

Governor's Reply.

The Governor, in reply, said: I feel rather nervous in speaking after the very eloquent speech which Mr. Robert Williams has just made, after the touching appeal he has just made regarding happenings, already historical, in which he personally took such a brilliant part. I will, however, not omit to say how much we have been touched by his remarks in praise of our country and for our work in this colony; coming from a man such as he, from such an experienced colonial, such testimony is particularly valuable.

We cannot, and we do not desire to forget Mr. Williams, that at the time when one still hesitated to believe in the truth and importance of the mining discoveries of the Katanga, you have had the faith, an efficacious faith, which you have known how to communicate to others, and that you have given us material assistance and a proven experience, the high value of which it would be idle and unjust to overlook. Our legitimate Belgian pride can conform this homage with truth. We associate in the same grateful thoughts all those who, Belgians or foreigners, have contributed in laying bare the treasures with which nature has so generously endowed the Katanga. You are in the forefront of those, Mr. Williams. The Katanga owes much to your foresight, to your tenacity of purpose, and also to your splendid optimism, because one must be optimistic when in action.

Permit me therefore, sir, that I publicly praise you and that I tell you that we are proud to include amongst us this evening one of those pioneers whose name is already inscribed in the history of New Africa.

We are very touched by the sentiments of gratitude which you have been good enough to express as to the reception given you in the Katanga, and I am certain to be the interpreter of all in saying that yourself, Mrs. Williams and the charming young ladies who accompany you, will leave behind you a profoundly sympathetic souvenir.

Believe me also that we have been happy to know that such a representative personality of the great British nation has been able to testify that, in this little corner of the Globe, Belgians and Britons collaborate with full confidence, with full friendship. These sentiments, which already found their being in a reciprocal esteem have been certainly strengthened by the remembrance of the sacrifice and suffering endured in common during the Great War, by the remembrance of the glory acquired by our joint flags.

Ladies and gentlemen, I raise my glass to King George and the members of the English Royal Family. I ask you to charge your glasses and to drink to the health of and to a pleasant voyage for Mr. and Mrs. Robert Williams and the graceful young ladies of their party. I raise my glass and drink to the prosperity of the Union Minière, to its managers and to all those who, by their hard daily work, labour for the success of this great and wonderful enterprise.

Letters to the Editor.

GOOD FOOTAGE WITH A HOLMAN.

To the Editor, *S.A. Mining and Engineering Journal.*

A practical miner on the Far East Rand, who is a constant reader of the "Journal," writes us as follows:—

Sir,—I am machine developing and I would like to know the record footage per machine? Last month, for 23 shifts with one Holman cradle hammer I broke 106 feet in a reef drive 8 x 10. Four feet of this footage was deducted for costs in previous months. As far as I know I think this is a world's record. Probably you know beter.—I am, etc.,

J. M.

CONCERNING GEDULD EAST—FAR EAST RAND.

A Worker's Views.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—Your article "Concerning Geduld East" in the *Mining Journal* of May 5th makes very interesting reading, but I cannot think you advocate the stopping of the mining industry on account of the Nationalist-Labour pact. As a Rand worker of nearly 30 years' experience I don't agree with your sentiments at all, for surely you must realise that the country is depending more or less on the mining industry, and that if development is retarded, or stopped altogether, a very serious position for the white population will arise in the near future. The much-reviled capitalist has had a good innings now, and why not give the workers a chance? Why not advocate the raising of capital from the workers? If every white man on the mines was paying an industrial tax of 6d. per day, coal miners and V.F.P. 4d. per day, and railwaymen 3d. per day, with all natives paying 3d. per month, there would be sufficient to make a start with by the Government on these New Areas. Then, once a year a tax of 2s. 6d. be demanded from all citizens, including the Chamber of Mines and the *Mining Journal*. No written receipts need be given for this tax, but buttons or badges to be used, which would open up another industry. The buttons or badges to be struck each year, and to be on sale at every railway station, post office, or public institution, thus doing away with the cost of collecting, and no licence be issued for trading or travelling, neither any name be entered on the voters' roll till the industrial tax button or badge be exhibited. How much money could be raised in the course of a year by these methods? Surely there could be enough to ensure the continuance of the mining industry? There is no need for the much-reviled capitalist to put his hand into his pocket and pull out nearly two million. The most any man would have to do would be to provide less than £40 in five years, which would be money well spent, and he would never miss it.

Don't think for a moment, Mister Editor, that I am against the Chamber of Mines, or the present method of working the industry, as the industry has been a good friend to me, and it is only when the life or continuance of the industry is threatened that we have to seek for remedies which will keep it very much alive for many years to come. You must admit that the present industry can only exist so long as taxation and costs are kept down. How can these be reduced? With the present prospects of a change of Government there is no hope of a reduction of taxes. There is only, then, the reduction of wages, and this will be disastrous. Would it not be infinitely better to let us put that reduction into an industrial fund to let the Government work its own mines, and so *use the revenue for the reduction of taxation of existing mines?* Surely this must appeal to you, and I am convinced such a scheme would appeal to the great majority of South Africans who are beginning to view the future with alarm, and are thus giving a willing ear to the Bolshevik element in our midst. You were deploring the fact some weeks ago that we did not praise our great industry enough, but, Mister Editor we have no interest in the great industry to praise, as our interest only lies in our work, and that is liable to be severed at a moment's notice. Give us all an interest in this great land of wealth and sunshine, and you will soon see a prosperous and contented people building up a great nation. The same could apply to all minerals in the country, and the more men you employ the more money you receive for further exploration and development. Your figures as to how leases have benefitted South Africa makes one think furiously, but also makes us impatient at the tardiness of the Government in allowing us to be overwhelmed with taxation instead of producing the wealth which could bring happiness to many a home. Surely you could take this matter up, Mister Editor, in the interest of the country, the mines, and the workers, and so prevent further reduction of wages and revolutionary discontent.

As this is merely an outline of an idea, I do hope you will see enough virtue in it to give it a little consideration. As I have to get ready to get on shift I now leave it with you.—I am, etc.,

A. T. Y.

[The Journal is always glad to publish the views of mine workers on matters relating to the industry, and we are in entire agreement with our correspondent A. T. Y. when he says that the country is depending more or less on mining, and that any stoppage of the industry would place the white population in a very serious position. We also heartily endorse his view that costs and taxation must be kept down. But we fear his "buttons" scheme is hardly practicable.—Ed., S.A.M. & E.J.]

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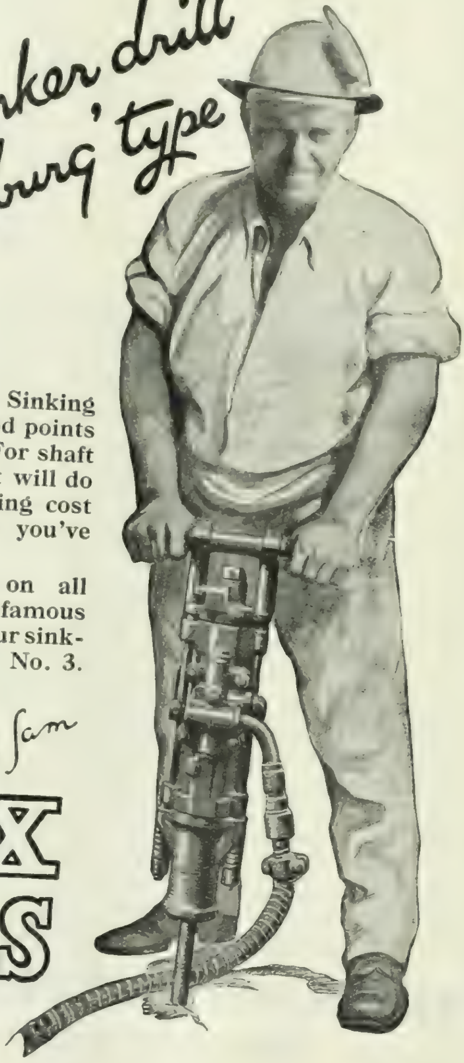

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The Plight of the E.R.P.M.

COMPANY'S ANNUAL MEETING — APPEAL TO GOVERNMENT FOR RELIEF—WHAT THE MINE MEANS TO THE RAND AND THE COUNTRY—MR. RALEIGH'S COMPREHENSIVE REVIEW.

The board of the E.R.P.M. has appealed to the Government for relief on the lines of the report of the Low Grade Mines Commission.

This was the outstanding feature of the speech made by Mr. F. Raleigh at the annual meeting of the company held in Johannesburg on May 15.

If no assistance is forthcoming what will happen to the property on which the whole of Boksburg and a portion of the Germiston district are practically dependent?

Mr. Raleigh showed that, notwithstanding a substantial reduction in costs, and with gold still at a premium, the mine was, to-day, faced with the fact that heavy monthly losses were being incurred which, although in a measure due to increased development expenditure, were more than disquieting.

The revenue and expenditure account showed a loss for for the first time since the amalgamation in 1908. The loss amounted to £110,489, and was solely attributable to the direct loss amounting to £141,550 made during the strike in order to maintain the mine and the organisation of the company. There had to be added to the working loss other expenditure.

Since the close of the year the company's operations had been conducted at a working loss, and its resources had been depleted during the first four months of the year by about £57,000.

If working losses continued to be made the present development programme could not be carried out, and with this in mind the board had approached the Government for relief for three years in the shape of the pumping costs, estimated at £7,000 to £9,000 per month. During the past nine years the company has expended £933,668 in handling the water in its mine.

Should the Government grant this relief the company would be prepared, subject to the general conditions remaining as at present, to continue the present energetic development and shaft sinking programme with the object of improving the ore reserve position.

As soon as the board received the Government's decision it would consider what course the company should pursue.

Mr. Raleigh referred to the fact that a commission of engineers appointed by the Government made it clear in its report that if pumping were discontinued on the E.R.P. the following mines would ultimately have their lives curtailed: Wit. Deep, Witwatersrand, Simmer and Jack, and Rose Deep.

The company had not paid dividends since 1916, but had distributed in working costs during the subsequent six years no less a sum than £10,352,595.

Mr. Raleigh stated that it was with a keen sense of responsibility to shareholders, debenture holders, the community, and the Government that the board had made its representations to the Government.

The Chairman's Speech.

Mr. Raleigh said:—

It would, indeed, be a matter of satisfaction were I in a position to-day to give you some reassuring information regarding the future prospects of the mine, the continued operation of which is so vital to the community and to the country. That such an assurance can not be given must be patent to those who have persued the annual report. It will have been observed that not only does the grade of ore milled show a marked falling off, but the development during the year, like that of the preceding years, has not disclosed anything which might be regarded as particularly encouraging or which holds out a definite prospect of an extended life—even when regarded purely from the point of view of balancing revenue and expenditure. The calamity of closing down—for such it would be—was averted during 1920 and 1921 by reason of the substantially increased price received for our product, and again in 1922, when the price had seriously dropped and was approaching towards normal, by the decrease in working costs, brought about by the reduction in wages and the general reorganisation of work following upon the disastrous and costly strike and revolution. Notwithstanding the substantial reduction in costs, and with gold still at a small premium, we are to-day faced with the fact that heavy monthly losses are being incurred which, although in a measure due to the increased development expenditure, is more than disquieting.

The Working Loss.

The revenue and expenditure account shows a loss for the first time since the amalgamation in 1908. This loss amounts to no less than £110,489, which is solely attributable to the direct loss amounting to £141,550 made during the strike in order to maintain the mine and the organisation of the company. Any prospect of materially wiping out this loss from profits during the last nine months of the year was entirely eliminated by the decline of 15s. 1d per fine ounce in the average price of gold, as compared with 1921.

Unfortunately, there has to be added to this working loss other expenditure. The subjoined statement details the items and shows that the total encroachment on the cash resources is £206,722; during the last year, in other words, the balance to credit of Appropriation Account is decreased by that amount, reducing it to £279,698 at the end of the year.

To meet total working loss during year ended 31st December	£110,489	7	4
Cost of Debentures purchased during the year	69,520	13	1
Annuity in respect of undermining rights	17,567	0	0
Purchase of 139,252 ex-enemy shares......	7,355	10	9
Government taxes	1,809	13	6
Total encroachment	£206,722	4	8

The financial position of the company at 31st December, 1922, shows a balance of cash and cash assets as follows: ...

Cash in hand, investments, gold on consignment, sundry debtors, stores and material amounted to	£839,207	6	3
Less: Liabilities other than outstanding Debentures (£536,860) and Annuity Account (£26,350 10s.)	159,864	0	9
Leaving a balance of cash and cash assets of	£679,343	5	6
This sum is made up of:			
Balance of Appropriation Account . . .	£279,698	0	5
Mine Development Suspense Account ...	306,352	12	8
Debenture Redemption Reserve Account	78,220	15	5
Undermining Rights Annuity Suspense Account	15,071	17	0
	£679,343	5	6

Miners' Phthisis Liability.

While this balance exceeds the nominal value of the unredeemed debentures and balance of Undermining Rights Annuity Account, it must be remembered that there is a large liability in respect of miners' phthisis which will have to be met if the mine closes down, and which if the Act now before the Union Parliament is passed, may amount to between £300,000 and £400,000. The contribution of the company to the Phthisis Fund during 1922, based on the underground shifts worked, increased by 86 per cent. over 1921 [illegible] in 1922 as against 3s. [illegible] in 1921.

The results of operations for the year, for comparative purposes, are rendered valueless by reason of the entire cessation of work during a portion of the strike period and to the inability to work at full pressure owing to an adequate supply of labour being unavailable until July.

The average working cost per ton milled for the last six months of the year was 21s., equal to 81s. 8d. per fine ounce produced, which is a decrease on last year of respectively 1s. 8d. and 15s. 7d.

Any further reduction of costs must come mainly from improved efficiency, particularly in the breaking and handling of rock underground. This matter receives continuous attention, and I am glad to say that during the year efforts in this direction have met with considerable success. The reduced working costs of 5s. 8d. per ton obtained in the second half of last year as compared with 1921 are, however, entirely offset by the lower grade of ore milled and the fall in the price of gold.

The water pumped for the year amounted to 715,847,000 gallons, which closely approximates the figure of 1921.

The cost of mine pumping remains a very large item, approximately £90,000 per annum.

Ore Inconsistency.

The ore developed during the year, viz., 274,126 tons, of a value of 6·6 dwts., while in a measure encouraging, was totally inadequate to maintain the ore reserve, which, as it is, is in a very depleted state. The development, other than internal, was confined to the Driefontein section and to a lesser extent, to the Comet Deep. Of the 8,095 feet sampled, 3,500 was internal, and the balance in virgin ground in the areas just mentioned, where a marked inconsistency in values has been disclosed, stretches of very high grade ore being followed by stretches of totally unpayable ore, which will probaby adversely affect the grade of ore eventually drawn therefrom.

With the limitation of the Farrar secondary shaft, which is only a three-compartment one, it is not possible to draw on these areas to the extent to which they are now able to provide rock. This shaft is, therefore, being widened to a five-compartment one, and if development operations continue will be in use as such early in next year.

The ore reserve continues to decline, and has now reached the unsatisfactory figure of 1,724,350 tons, i.e., 223,300 tons less than last year, the value, however, remaining the same, viz. 6·7 dwt. It is here where our main trouble lies, as the quantity is insufficient to fully supply our large reduction plants. During the last year only 42 per cent. of the tonnage mined was drawn from payable ore reserves, the balance being from areas not included in reserves, reclamation and development.

Since the close of the year, the company's operations have been conducted at a working loss of over £17,000. As you know, this does not include any of the sums necessary to meet the debenture service, i.e., redemption and interest, neither does it include other outgoings, which are, however, about met by sundry revenue, including interest. The net cost of these items, which are not charged in working costs, is about £10,000 per month, so that if they are taken into account the company's resources have been depleted during the first four months of this year by about £57,000.

Development Policy.

After the strike and revolution during the early part of last year and the reorganisation at the mine which followed, whereby working costs were materially reduced, an extended programme of development was authorised by the board as the only hope for the future. This is reflected in the increased footages accomplished since the middle of 1922, which average well over 3,000 feet per month, as against less than half that monthly footage in the previous four years, viz., 1918-21 inclusive. This policy has naturally increased the working expenditure at the mine, and, together with a fall in the recovery grade and a reduction in the price of gold—which latter is equal to about £8,000 per month less revenue—is the cause of the losses referred to.

If working losses continue to be made, it is evident that the present development programme, which includes the sinking of the Hercules Incline Shaft from the plane of the 34th level, also the Farrar and Angelo Secondary Inclines cannot be carried out.

The Government Approached.

With this in mind the Board has approached the Minister for Mines, and has asked that the Government should afford some relief on the lines of the Low Grade Mines Commission's report. This Commission, which reported to the Government, in 1920, stated:

Par. 78: In certain circumstances it may become imperative for the State to intervene, and in such a case it might be necessary for it to render financial assistance. There is, for example, the case of the East Rand Proprietary Mines, one of the typical low grade mines. Large quantities of water, amounting to more than three million gallons per day, enter this mine, and it is only by continuous pumping on this extremely large scale that the water can be kept down. The cost of pumping is about £100,000 per annum, and is in itself a heavy burden on a struggling mine. If pumping were to stop, the inflow of water would rapidly fill up the mine and would, after reaching a certain level, overflow through a zone of rock which is permeated with a series of natural fissures into the adjoining mines to the west. These mines are connected continuously with other mines farther west, as far as the Geldenhuis Deep, and the existence of all of them would be threatened, since none of them is equipped with pumping plant adequate to cope with such a large additional quantity of water. The water could be stopped at the Simmer and Jack Mine by suitably constructed barriers but even up to this point there are five large mines, the continued existence of which depends on pumping operations being maintained uninterruptedly on the East Rand Proprietary Mines. These mines are the Wit. Deep, Witwatersrand, Knights Deep, Knight Central and Rose Deep.

Par. 79: If the East Rand Proprietary Mines closed down it is estimated that within one year the water would have risen to such an extent as to flood the Witwatersrand Deep and render it inoperative, and the other mines would follow sucessively. The sole way of preventing such a calamity would be to arrange, with or without the assistance of the State, that pumping operations should be continued on the East Rand Proprietary Mines, for this mine is the only one equipped with plant which is adequate for the purpose. The cost of pumping, after the cessation of general mining work on this mine, would be greatly increased, since it would involve the maintenance of certain shafts and other operations, as well as superintendence, the cost of which is not now debited to pumping.

Par. 80. Under these circumstances it might be in the best interests of the State to subsidise the East Rand Proprietary Mines to continue ordinary mining, a less expensive form of providing for continued pumping, than to close down the mine and confine work to pumping only. If the mines whose existence is threatened by the cessation of pumping were earning good profits it could reasonably be expected of them that they should finance the operations themselves and make such arrangements with the East Rand Proprietary Mines as may be to their mutual benefit. These mines are, however, all low grade mines, and although some contribution towards the cast may, perhaps, be levied from them, there seems to be little hope of any effective steps being taken, without substantial financial aid from the State, that is when gold has returned nearer to its normal value.

Par. 81: The problem of the East Rand Proprietary Mines is one that should be thoroughly investigated by the Government, as being by far the most important and difficult case of any low grade mine or group of mines.

It is true the gold premium has saved the situation for the time being, but it would be as well for the Government to be fully informed of the situation, if ever the company should again find itself in the position it was in immediately prior to July, 1919.

Par. 82. In no other case than the East Rand Proprietary Mines has the Commission been satisfied that a good claim for assistance by way of subsidy could be established.

Uncertain Outlook Aggravated.

During the year that the Commission's report was issued (1920) the price of gold averaged 110s. per fine ounce; it is now about 89s., or a decrease of about 21s. per fine ounce, and the company's position now is as stated in paragraph 81, above referred to, excepting that the company's uncertain outlook is aggravated, in that the ore reserves have in the meantime been further encroached upon and reduced from 2,634,000 tons of a value of 6.3 dwts. at the end of 1919 to 1,724,000 tons of a value of 6.7 dwts.

The board has suggested to the Government that if relief can be afforded to the company it would be prepared, subject to the general conditions remaining as at present, to continue the present energetic development and shaft sinking programme, with the object of improving the ore reserve position, and has asked that such relief should be for a period of three years, and should consist of the pumping costs, which are estimated at £7,000 to £9,000 per month. I may say here that during the past nine years the company has expended £933,668 in handling the water in its mine.

As soon as the board receives the Government's decision it will consider what course the company should pursue for the future; it is hoped, however, that the Government will, in the interests of the general community, acquiesce in the proposals submitted.

It has been pointed out to the Government that the figure used by the Low Grade Mines Commission (paragraph 76) of indirect benefit derived by the State from the mines was 3s. per ton, excluding railway revenue. On this basis, if this company only discontinued milling its 134,000 tons per month, the Government would lose £21,600 per month, which shows that it could well afford to pay the pumping costs in order to save the difference and avoid the social and other difficulties incidental to the closing of this mine.

You are aware that a commission of engineers was appointed by the Government which inquired into the possibility of the East Rand Proprietary Mines being closed-down, and the effect thereof. This committee reported to the Minister of Mines two years ago. Its findings were summarised by the Chairman at our annual meeting in May, 1921. It was made clear also in the commission's report that if pumping were discontinued on the East Rand Proprietary Mines the following mines would ultimately have their lives curtailed, viz.: Witwatersrand Deep, Ltd., Witwatersrand G.M. Co., Ltd., Simmer and Jack Proprietary Mines, Ltd., and Rose Deep, Ltd.

Position of Boksburg and Germiston.

This commission's minority report stated that the whole of Boksburg and a portion of the Germiston district was practically entirely dependent on the employes of the East Rand Proprietary Mines and the mines mentioned for their livelihood, and the following statement, based on the numbers employed and the expenditure incurred for December, 1920, was submitted in that report:—

"Number of whites directly employed by the mines in the district referred to, 4,260; annual wages, £2,055,000.

"Natives directly employed by the mines, 31,000; annual wages, £1,082,000.

"Gross annual expenditure by mines, £5,420,000

"Total crushing capacity, 6,228,000 tons

"The townships of Germiston and Boksburg have a total population, including the mine employes mentioned above, of 33,000 whites and 70,000 natives.

"It will be understood that we are concerned with the existence as a going concern of a large and well-equipped industrial and social organisation, whose essential economic foundation is the mines themselves. When these close down a great part of the value both of the organisation itself and the fixed capital employed will be destroyed, and until something else can be substituted the period of readjustment will certainly be painful to the community concerned, involving its migration to other districts, and expensive to the State.

"From these facts it will be clearly seen that it is the Government itself which has the greatest financial interest in the continuation of the operations of these mines, and we are of opinion that if the East Rand Proprietary Mines were guaranteed against loss to the extent of their pumping charges, which they have now carried for many years, it might be of considerable assistance to them in enabling them to prosecute further exploration for payable ore and possibly enable them to extend their life for some further period."

The company has not paid dividends to its shareholders since 1916, but has distributed in working costs during the subsequent six years no less a sum than £10,352,595 in the following manner:

White wages	£3,467,286
Coloured wages	2,095,095
Stores and materials	3,706,467
Other costs, comprising:	
Miners' phthisis contributions, Rand Water Board fixed charges, Native Recruiting Corporation—recruiting fees, etc., holiday leave, claim licences, insurances, etc.	1,083,747
	£10,352,595

It is clear that if development and shaft sinking cease this distribution is bound, in the near future, to be lost to the community for good, as such a course will mean the early closing of the mine.

It is with a keen sense of responsibility to shareholders, debenture holders, the community and the Government of the Union that the board has made its representations to the Government. The board, on its part, has shown by its efforts since the strike and the expenditure it has undertaken on shaft sinking and development, its willingness to grapple with the problem of putting the mine into a position to continue operations and thereby permit the other mines interested in its water problem to also carry on, and it now feels that it has no alternative in view of the losses being made and the company's financial obligations to its debenture holders and to the Miners' Phthisis Board, but to put the matter before the Government as recommended in the Low Grade Mines Commission's report. The board now anxiously awaits the Government's reply to its representations.

I beg to record the board's appreciation of the valuable services rendered throughout the past year by the consulting engineer (Mr. J. Whitehouse), the manager (Mr. E. C. J. Meyer), and the staff at the mine and head office.

I beg to move that the directors' report, balance sheet and accounts for the year ending December 31, 1922, be received and adopted.

The Pumping Costs.

Mr. Gamble, a shareholder, compared the costs of pumping at E.R.P.M. with other mines, and contended that the mine's own consumption of 35 million gallons in milling operations should be offset against this cost. He thought the best assistance the Government could give would be to warn investors against placing too much trust in group control and in taking steps to prevent the policy of "picking the eyes" out of a mine and leaving millions of tons of low-grade ore to be dealt with later. He believed it would be best for the E.R.P.M. to close operations

At the request of the Chairman, Mr. Whitehouse, the company's Consulting Engineer, answered Mr. Gamble on the technical points. He explained that the quantity of water pumped was not a measure of the cost; a very large proportion of that now dealt with was raised from the 34th level, or approximately 5,000 feet depth. There was also to be considered the cost of circulating the water for dust laying purposes, which was not done in 1912, the year selected by Mr. Gamble for his comparisons.

The Chairman said it was no new position for the E.R.P.M. to find itself in, as one might imagine from Mr. Gamble's remarks. There were many who were surprised that it had continued operations so long as it had. The cause of that position was not "picking the eyes out," but simply and solely due to the large area of unpayability. For the last eight years it would be seen that the yield had been below 6 dwts. per ton milled, and latterly below 5 dwts. No one could put gold into the reef if it was not there. Mr. Raleigh added that he had put nothing but the facts of the position before the shareholders, and it was not, as Mr. Gamble suggested, "throwing a bucket of cold water over them" to put the plain facts of the position frankly before them.

The report and balance sheet were then adopted, Mr. Gamble alone voting against; the retiring directors were re-elected, and in reply to a further question by Mr. Gamble, the Chairman said the ex-enemy shares were held by trustees and could not be used for voting purposes.

The Currency Problem.

MR. SAMUEL EVANS REPLIES TO MR. D. C. GREIG.

In our last issue we gave prominence to a letter from Mr. D. C. Greig on the currency question, in which he criticised the views of Mr. Samuel Evans. The latter has now replied as follows:—

It is regrettable that Mr. Greig does not make sure of his facts before committing them to print.

Now, the facts are:

(1) The communication addressed on behalf of the Witwatersrand gold mining industry to the Public Accounts Committee emanates not from the Executive of the Chamber of Mines, but from the Gold Producers' Committee. I am not a member of the Gold Producers' Committee, and oftener than not I disagree with their views or absence of views on currency and exchange problems. In my opinion, the letter to the Select Committee is too weak and inconclusive. Had I drafted it I should never have inserted the phrase:

> "I am requested to make it clear that this letter is not submitted with a view to opposing the present Currency Act Amendment Bill, for which there are doubtless many good reasons."

I should say that the Gold Producers' Committee were influenced not by anything I did, but by Mr. Charles Hewitt's striking criticism of the currency policy of the Union Government, which was published in the Press here on April 11. As stated in the interview I had with your Johannesburg correspondent (see *Cape Times* of March 27 last) I consider the Currency Bill "a shameful betrayal of gold by the one Government of the world which might have been expected to do its best to rehabilitate gold with the least possible delay."

2. Mr. D. C. Greig is mistaken in assuming that my views of the future of gold have changed since 1921. I hold precisely the same views now as I did then, namely, that having regard to what happened during the Bank restriction period and afterwards in the first half of the nineteenth century, it is "justifiable to assume that we are at the beginning of a permanent, and in all probability, a prolonged and very far-reaching rise in the value of gold, and that the downward trend of prices of commodities and services as a whole will continue, with occasional temporary interruptions, until the complete readjustment of prices has been effected." I showed in the speech referred to by Mr. Greig that the value of gold in terms of commodities "fell for 23 years from 1786 to 1809, it rose for 40 years from 1809 to 1849, it fell for 24 years from 1849 to 1873; it rose for 23 years from 1873 to 1896, and it fell for 24 years from 1896 to 1920."

I made it clear that during the periods mentioned the movement of prices was not consistent, and that there were temporary fluctuations in the opposite direction. For instance, although on the whole gold was appreciating from 1809 to 1849, there were several years during which gold depreciated in value compared with commodities, notably between 1816 and 1818 and between 1833 and 1839. Not only in the speech referred to, but also on previous and later occasions, I have pointed out that "sooner or later gold would come into its own; that it could not be permanently displaced by paper money, and that a time must come when the world would be forced back to a currency the supply of which is determined by the cost of its production."

As I pointed out at the annual meeting of the Crown Mines last year, the most insidious and gravest danger confronting the gold mining industry at the moment is the aspiration of our Government and of other Governments for the establishment of some uniform plan for the stabilisation of currencies and exchanges. It is obvious that even the temporary and partial success of such schemes as those advocated by Mr. Darling, Mr. Greig and other champions of paper money might prove disastrous to the gold mining and other industries of South Africa. As I have repeatedly insisted, eventually we shall have to come back to gold, "no doubt after the people of the world have gone through much tribulation and misery owing to the precious time wasted by politicians to discover an acceptable medium of exchange, the value of which they can control."

Mining Men and Matters.

The ordinary general meeting of the Chemical, Metallurgical and Mining Society will be held in the Scientific and Technical Club, 100 Fox Street, Johannesburg, tonight, Saturday, the 19th inst., at 7.45 p.m. Contributions to the several discussions are welcomed, and may be read at the meeting or handed to the Secretary for publication.

Dinner will be served in the Club on the evenings of general meetings from 6.45 p.m. by arrangement.

General Business: Exhibition and Demonstration of Devices, etc., of Practical Advantage.

Papers for Reading: (1) "Notes on Fan Ventilation in Deep Mines," by J. A. Woodburn; (2) "The Recovery of Gold Absorbed in Reduction Works," by A. King.

Reply to Discussion: (1) "Investigation on the Copper-Nickel Ores of the Rustenburg District," by J. A. Ortlepp; (2) "Some Notes on the Evolution of the Konimeter," by R. A. H. Flugge-de-Smidt.

Final Discussion: (1) "The Value of Rand Gold Mining Investments," by W. A. Caldecott and G. J. V. Clarence; (2) "Alcohol Fuel Mixtures," by H. R. Adam; (3) "The Lowest Temperature Yet Attained," by H. H. Paine; (4) "Return to Capital Invested in the Witwatersrand," by R. A. Lehfeldt.

Discussion: (1) "Recovery of Gold by Blanket Concentration in Substitution of Plate Amalgamation," by F. Wartenweiler; (2) "Notes on Cupellation Losses," by H. R. S. Wilkes; (3) "Notes on the Contamination of Coke Samples when Prepared in a Disc Grinder," by J. Henderson; (4) "The Solubility of Gold Amalgam in Cyanide Solutions," by H. A. White; (5) "Observations on the Tin-Antimony-Lead Alloys," by R. W. Irwin; (6) "Further Notes on Return to Capital Invested in the Witwatersrand," by R. A. Lehfeldt.

Modder B. Gold Mines, Limited.

WORKING PROFITS DOWN £230,513—COSTS REDUCED—THE DEVELOPMENT POSITION.

The annual meeting of the Modderfontein B, Ltd., was held in the board room of the Corner House on May 15. Mr F. R. Phillips presided. The Chairman said: The total working profit realised during the year under review amounted to the sum of £782,216. As compared with the results of the preceding twelve months, a decrease in working profits of £230,513, or 2s. 3d. per ton milled, must be recorded, notwithstanding the fact that there was an increase in 1922 in yield of 11d. per ton milled with gold at standard price, and that a non-recurring amount of over £80,000, referred to later, was added to the profits of the same year. The decline in profits was due to the following two main causes: first, the strike, which lasted from 10th January to 17th March, caused a dislocation in working conditions which affected adversely the first six months of the year. For the quarter ended 31st March, a working loss of £7,204 was incurred, and in making a comparison of the profits of the year 1922 with those of 1921, it is necessary to take into consideration not only the actual loss made but the absence of profits, which it is reasonable to suppose would have materially altered for the better the complexion of the 1922 figures. Further, although the strike ended in March, the effects of the disorganisation temporarily created thereby were certainly still being felt up to the end of the second quarter of the year. The quarterly reports for the last three quarters of the year issued prior to the publication of the annual report and accounts clearly reflect this position:—

Quarter ending—	Tonnage crushed.	Working costs per ton milled. s. d.	Profit including sundry revenue.	Avge. net price of gold. s. d.
30th June .	155,000	23 4	£190,897	90 5
31st Sept. .	185,000	21 9	261,073	90 7
31st Dec. .	188,000	20 9	275,424*	87 10

(*Excludes special declaration of £80,750 and gold adjustment £5,384.)

The second main cause of the decrease in the profit was the decline in the price of gold. For the year 1921, the average price obtained for gold was 105s. 5d., while for 1922 it was 90s. per fine ounce. Thus for the former year the additional revenue obtained from the higher selling value of gold over and above its standard value amounted to no less than £384,697, whereas for the latter period the corresponding figure was only £94,566.

Turning for a moment to the accounts, the balance of working expenditure and revenue account shows a net profit of £806,734 14s. 6d. This amount, together with the unappropriated balance of £308,485 8s. 10d. brought forward from last year, and an additional amount in respect of forfeited dividends and a net credit on capital account, makes a total of £1,124,915 10s. 3d., and has been allocated as follows:—

	£	s.	d.
Government and Provincial Taxes	£113,863	1	1
Expenditure in connection with purchase of ex-enemy shares	18 672	5	7
Dividends Nos. 20 and 21 (together 85%)...	595,000	0	0
	£727,535	6	8

leaving a balance unappropriated of £397,380 3s. 7d. Of this balance £237,654 14s. 7d. is represented by net cash and investments, after allowing for liabilities.

Reduction of Working Costs.

With regard to the past year's mining operations, the outstanding features were the reduction in working costs, the increased efficiency displayed and the large amount of development work accomplished. Working costs for the year under review amounted to 24s. per ton milled as against 26s. per ton milled for the previous year. But owing to the strike, the first half of the year must be considered abnormal, and a better comparison is seen if the period July to December in the two years is taken. For this period in 1922 working costs per ton milled averaged 21s. 2d., as against 25s. 11d. in 1921. Thus the reduction in costs achieved after the strike can be said to be about 4s. 9d. per ton milled. As the price of gold, however, declined by something like 8s. per ton milled, and as the price obtainable for gold has since still further fallen, it is clear that the foregoing reduction in working costs is not in itself sufficient to keep up the level of recent years' profits.

Shafts and Ore Reserves.

The new south-west deep level shaft was transferred from Capital Account to Working Costs after the strike. The immediate effect of this was to add temporarily to the cost of working until the tonnage to be dealt with by this shaft had reached nearly its capacity of 30,000 tons per month, which could only be done gradually. This shaft has now reached an output of 25,000 tons, and with the increased tonnage the general costs of the mine are falling. As compared with the previous year, the costs have been additionally burdened by increasing the amount of development from an average of 2,000 feet a month in 1921 to over 2,800 feet for the last six months of 1922, which must be noted. This became necessary as the percentage of payability was very low. With an increase in the percentage of payability and less development the costs would be at once substantially reduced. Since the strike, however, there has been a decided improvement in efficiency, and costs have responded in a satisfactory and marked degree.

At the 31st December last, the ore reserve, as re-measured and re-valued, amounted to 2,609,600 tons of 9·3 dwts., as against 2,773,300 tons of 9·6 dwts. for the previous year. The decrease in tonnage of 163,700 tons is due chiefly to the reduction in stoping width. The drop in the value of ·3 dwt. of the ore reserves is due to the addition of new tonnage of lower grade ore, a fact to which the attention of shareholders has been directed. During the past year, a very large development footage has again been accomplished, the total footage being 22,357 feet. Unfortunately, the results of this large amount of development done were unsatisfactory. The estimated payable ore developed amounted to only 486,700 tons valued at 6·9 dwts., as compared with a total of 512,000 tons mined from reserves at an estimated value of 10·1 dwts. per ton. It is, therefore, obvious that the permanent maintenance of the future grade of the mine at a high level is dependent upon the degree of success attained in disclosing ore in our future development of a higher value than that exposed last year. In this connection you will realise that we have much ground as yet unexplored, and that our leading development headings will continue to be pushed with the utmost vigour. The increased yield during the past year is due partly to the successful efforts of the management in securing cleaner mining and partly to the large percentage of waste rock sorted out both underground and on the surface, more than 25 per cent. of the total rock broken being separated from ore sent to the mill. Of the development footage accomplished during the year under review, 11,155 feet, or 63·3 per cent., was in reef formation, and of this footage only 37·8 per cent. was payable.

The Development Outlook.

If you examine the plan which accompanies the annual report, you will notice that a large amount of development has been done in the country served by the south-eastern shaft, but the values on the whole, except as hereafter mentioned, have been below the pay limit. On the other found, in the south-eastern corner of the mine, the good values previously disclosed in the drive from the Geduld have been kept up to the end of the year, confirmed by subsidiary development. In the [illegible] part, however, the values in the drive to the north have, we hope only temporarily, become unpayable.

In the north-eastern section of the mine, payable ore of low grade character has been opened up, the details of the actual work done during the past year and values disclosed being given in the manager's report. In the south-western section much development work was accomplished. The values disclosed in the east of the area commanded by the south-west shaft continued to be payable but owing to the erratic nature of the reef exposures both in their values and width, the grade of ore here developed declined. An encouraging feature, however, is that the reef from the Government Gold Mining Areas up to the southern boundary of your property at a point about 2,500 feet distant from the western boundary gives high values, thus affording some indication of the lateral width in which payable ore may be reasonably expected.

Although the development on the eastern side and in the neighbourhood of the South Shaft has been on the whole very discouraging, it must be noted that we have several points, widely separated, proving good payable reef, such as 8th winze, where over the last 260 feet the values have ranged from 240 to 540 inch-dwts., and would probably give a stoping value of about 7 dwts.

It is also encouraging to note that the raise to meet this winze is proving promising reef, the last 15 feet sampled giving 329 inch-dwts. 5a Drive West from the south-east shaft is also proving good payable reef, the most recent values over the last 100 feet averaging 424 inch-dwts.

It is also interesting here to note that the 6th drive advancing eastwards from the south-west shaft has recently entered probably the same payable patch immediately below the 5a drive above referred to.

There is a reasonable chance, therefore, of opening up a fair tonnage of payable ore, although it may not be up to the average of the high values proved in the western area. These payable patches, together with the highly payable ground proved by the Geduld Mining Company in the south-eastern corner of our property, and the indication of payable reef at the bottom of 9-4 winze, should play an important part in the near future in providing additional tonnage for the mill.

Capital Expenditure and New Equipment.

The capital expenditure during the past year amounted to a comparatively small sum, and does not call for any comment. Future requirements of a capital nature, as at present indicated, are also of comparatively small account.

Your Board has now sanctioned a centralised underground pumping scheme, whereby several small units will be eliminated and pumping costs reduced. The flow of the mine water will be concentrated to a common point on the 7th level west, south-eastern shaft, where the permanent central pumping station will be erected. It is estimated that the amount expended for this purpose will be recovered by actual saving in working costs within the next few years

Some capital expenditure, spread over a period of two years, will also be necessary for the provision of a new haulage system to deal with the ore to be mined from the south and south-eastern section of the mine. Originally it was intended to equip the south-eastern shaft to haul ore to the surface, and it was hoped that this shaft would take the place of the central shaft and become the main producer of ore for the mill.

The equipment of this shaft was deferred until such time as the development had proved the existence of large bodies of payable ore to justify the spending of the large sum of money necessary for a new winding engine and electrification of this plant.

Unfortunately, the expectation of opening up large bodies of payable ore in this section of the mine has not so far been realised. It is true that a large area is still unexplored, and it is obvious that no forecast of the values in that ground can be attempted. At the same time, 22,000 feet of development has been accomplished in this section, and although patches of good ore have been discovered, the outlook does not at present warrant the expenditure necessary to equip fully the south-east shaft.

Instead of equipping permanently at this stage the south-eastern shaft, the Board is considering the conversion into an incline shaft of the winze connection from the central shaft to the lowest level of the mine. The necessity exists for placing the mine, as aconomically as is consistent with efficiency, in a position to handle after the next two years at least 1,000 tons per day from the south-eastern and eastern sides.

Metallurgical Alterations.

An alteration has been affected in the reduction plant, the amalgamation plates being abolished and replaced by tables covered with corduroy cloth. The immediate effect of this change-over was the release of gold carried on the amalgamation plates, and a special declaration, as already stated, amounting to a sum of no less than £80,750, was made in December. The new process is working very satisfactorily, a slight improvement over the old method both in costs and recovery being shown. The further advantages of the use of corduroy tables are the minimisation of the chances of mercurial poisoning and the opportunities of gold thefts. Another interesting effect of the use of corduroy is the greatly increased recovery of osmiridium. The Crowe De-Aeration Process, which was first introduced on the mine towards the end of 1921, has now been in use for a sufficiently long period to prove that increased precipitation has resulted and that savings on cyanide and zinc consumption have been made. It is estimated that by means of this process reduction costs have been lowered by 2d. per ton milled.

With regard to operations in the current year, the working profit for the quarter ended 31st March amounted to £216,907, the net price of gold being 85s. 4d. per fine ounce and working costs 2s. 5d. per ton milled. For the month of April, a profit of £74,623 was made, the net price of gold being 85s. per fine ounce and working costs 20s. 3d. per ton milled.

In conclusion, the Board desires to express its cordial appreciation of the valuable services rendered by the Manager, Mr. C. L. Butlin, by the Consulting Engineer, Mr. Stuart Martin and by their respective staffs.

I now beg to move that the Directors' Report, Balance Sheet and Accounts for the year ended 31st Deember, 1922, laid before the meeting, be received and adopted.

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Rose Deep, Limited.

YEAR'S RESULTS REVIEWED—ORE RESERVES AND LIFE—CONCENTRATION OF REDUCTION WORK.

Mr. F. R. Phillips, Chairman of the Company, presided at the annual meeting of the Rose Deep, Ltd., held in the Board Room, Corner House, on Thursday. The Chairman said:—

Gentlemen,

The net profit earned for the year amounted to £49,238. This sum, together with the balance of £139,526 14s. 8d. unappropriated at the end of last year and two small sums in respect of forfeited dividends and a net credit to capital account, made a total of £189,453 14s. 11d., and has been dealt with as follows:—

	£	s.	d.
Purchase of ex-enemy shares	£18,826	17	0
Government and Provincial Taxes ...	10,190	18	8
Dividend (No. 42 and 43, together 11¼ per cent.)	74,639	11	9
	£103,657	7	5

leaving a balance unappropriated at the end of the year of £85,796 7s. 6d., of which £34,854 4s. 10d. is represented by net cash after allowing for liabilities. I do not think it is necessary for me to comment upon any figure in the accounts, with the exception of that in connection with the purchase of ex-enemy shares. You will remember that at last year's meeting you were informed that the approximate number of shares acquired from the Custodian was 36,000, and that the Board considered the best course would be to reduce the capital of the Company by cancelling these shares at a specially convened meeting of shareholders. The actual number of shares acquired, as you will see in the directors' report, amounted to 36,537. The Board has since considered and approved of a simpler and better method for dealing with these shares, and has decided that they shall be placed and held in the names of two trustees on behalf of the Company and shown in the accounts on the asset side of the balance sheet. By this means the capital of the Company will remain unaltered, and therefore the expense involved in calling a special meeting for effecting a reduction of capital will be avoided. At the same time, in the matter of the payment of dividends, the Company benefits to the same extent as though dividends were payable on a reduced capital; and by treating the shares as stated above there is the additional advantage that complete freedom of action is retained for dealing with them at some future date, should the occasion arise, either by way of re-issue or cancellation.

The Year's Operations.

Turning now to the operations for the past year, the total working profit amounted to £51,225, as against £124,907 for the previous year. The reason for the reduced profit must already be known to you. Operations were seriously affected by the strike, which lasted from the 10th January to the 17th March. During that period a working loss of £32,818 was incurred, to which must be added, in making a comparison between the two years' results, the absence of profit which would otherwise have been earned. A further adverse factor was the fall in the price of gold the average value for the year being 90s. 3d. per fine ounce, as compared with 105s. 4d. for the previous year. In spite of this it is interesting to note that at the normal price of gold operations during 1921 would have resulted in a loss of £43,931, whereas the results for 1922, under similar conditions, would have shown a profit of £12,000 in spite of the disorganisation resulting from the strike.

It is not necessary for me now to enter into the causes of the strike, but I need only say that especially in the case of this Company, which can be described as a typical low-grade mine, the proposals put forward on behalf of the whole industry for the re-organisation of working conditions have not only been proved without reservation to have been wholly justified, but indeed were of the least drastic nature possible to ensure the survival of the Company as a producer of reasonable profits. The progress of the reorganisation is clearly shown in the quarterly reports which were issued prior to the publication of the annual report and accounts. For the first quarter of the year, as I have already informed you, a working loss of over £32,000 was made, working costs being 36s. 8d. and the working revenue 24s. 7d. per ton milled. For the remaining three quarters of the year the results were as follows:

Quarter ended	Working Profit.	Cost per ton milled.	Revenue per ton milled.	Average price of gold.
30th June	£20,344	20/-	23/2d.	90/5d.
30th September .	£29,842	18/4d.	22/1d.	90/5d.
31st December .	*£31,475	17/1d.	21/-	87/9d.

(*Excludes adjustment of gold

Development.

During the year the tonnage milled amounted to 502,460 tons, and the development footage accomplished was 5,874 feet. The tonnage of payable ore developed amounted to 275,290 tons, valued at 5·3 dwts. The ore reserve as re-calculated shows a decrease in tonnage, as compared with the previous year, of 135,630 tons, but the value is slightly increased by ·2 dwt. The reasons for the reduction in tonnage are given in the Consulting Engineer's report, the reduction being due (1) to the small amount of tonnage developed during the year, and (2) to the elimination of certain low-grade blocks which on further work have proved to be unpayable. The latter factor accounts for the increased value of the ore reserve. The amount of the ore reserve now stands at the figure of 2,128,800 tons. You will understand that at this stage of the Company's life the amount of new development work that can be accomplished is limited, and therefore the ore reserve figure must necessarily be a declining one. Further, I should point out that the maintenance of profits—assuming the continuance of low working costs—depends upon the grade of ore sent to the mill. In order to keep the mill supplied with its full tonnage, it is necessary to supplement the ore mined from the reserve with ore obtained from reclamation areas. As the value of the available ore developed is rather lower than that of the total reserve, which includes high grade blocks at present inaccessible, and as the value of the ore from reclamation is of a still lower value, it necessarily follows that the grade of ore obtained in current operations must be slightly less than that indicated by the value of the total reserve.

Concentration of Reduction Work.

Mention was made at last year's meeting of the reorganisation which was being effected in the reduction works. The eastern plant has been closed and reduction operations have been concentrated at the western mill. This work was completed by the middle of last year, and the plant is working satisfactorily up to its full capacity. As a result of these changes, considerable savings are being effected. A further alteration at insignificant cost will shortly be undertaken, namely, the substitution of corduroy concentration for amalgamation in the battery. By this means it is hoped to minimise cases of mercurial poisoning and opportunities for gold thefts. It is also expected that small improvements will be effected both in respect of costs and recovery.

With regard to current operations, the net price of gold has fallen to 85s. 3d. The working costs per ton milled have, however, been maintained at the very satisfactory figure of 17s., and the working profit for the first quarter of the current year amounted to £27,132.

In conclusion, the Board desires to express its very cordial appreciation of the excellent work performed by the Manager, Mr. Milne, and the Consulting Engineer, Mr. Whitehouse, and by their respective staffs.

I now beg to move that the directors' report, balance sheet and accounts for the year ended 31st December, 1922, laid before the meeting, be received and adopted.

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TOPICS OF THE WEEK.

The E.R.P.M. and the Government.

The future of the E.R.P.M. has now become a matter for the Government of the country to decide; and at the annual meeting this week the Chairman, Mr. Raleigh, put all his cards on the table. Everybody now knows the critical position of the property, and it is clear that unless the Government steps in this great East Rand group of mines must close down in the very near future, with dire consequences to the whole community dependent upon it. The board has now approached the Minister for Mines and has asked that the Government should afford some relief on the lines of the Low Grade Mines' Commission's report. Part of that report, it will be remembered, said: "It might be in the best interests of the State to subsidise the E.R.P.M. to continue ordinary mining, a less expensive form of providing for continued pumping than to close down the mine and continue pumping only." It appears from Mr. Raleigh's speech that the board has only asked for relief to take the form of a subsidy to meet pumping costs, which are estimated at from £7,000 to £9,000 per month. During the past nine years the company has spent £933,688 in handling the water in its mine. The E.R.P.M. has paid no dividends since 1916, but has distributed in working costs in the subsequent six years no less a sum than £10,352,595. In view of what this means to the community, the board "now anxiously awaits the Government's reply to its representations." For our part, we cannot imagine a Government that has introduced bounties on iron and steel making and on meat export, failing to admit the justice of this appeal. The case for the modest subsidy asked for on behalf of the E.R.P.M. is overwhelming. It is confirmed by the finding of the Government's own Low Grade Mines' Commission, and it has the support of every thinking member of the community.

The Geduld's Outlook.

The most significant remark in the speech made from the chair at the annual meeting of the Geduld this week was to the effect that serious capital expenditure had now practically ceased, and a substantial advance in the dividend paying capacity of the mine was in sight. Mr. P. M. Anderson, who presided, described the position at the mine in considerable detail. He stated that the enlarged reduction plant was put in commission three weeks ago and was running satisfactorily. This bigger plant is more in keeping with the area of the property, and the increased scale of operations should lead to a material further reduction in working costs. The ore reserve position is a particulary good one, remeasurement at December 31st showing an increase of a quarter of a million tons, while the value was maintained and the width slightly increased. Actually the ore reserves amounted to 3,800,000 tons valued at 8.1 dwts. over a stoping width of 63 inches, and, in addition, the consulting engineer estimates that there were developed in the mine at the same date a further 2½ million tons of payable but low grade ore valued at 4½ dwts. over a stoping width of 62 inches. The total available tonnage is therefore 6,300,000 valued at 6.6 dwts. Last year the chairman stated that it was not intended that ore of this average stope value should be sent to the enlarged plant, but rather to rely upon being able to maintain a supply of the higher-grade ore. In the report of the consulting engineer, which was issued to shareholders about two months ago, he states that the development prospects are sufficiently bright to anticipate that the present grade of ore milled can be maintained with the enlarged plant.

Modder "B."

As the quarterly reports have led us to expect, the development position at the Modder B is unsatisfactory, but not without hope of improvement. In his speech from the chair, at the annual meeting this week, Mr. F. R. Phillips gave a detailed description of the year's results, and shareholders will, doubtless, study his remarks very carefully. As regards the results of operations during last year, the chairman showed that the outstanding features were the reduction in working costs, the increased efficiency displayed, and the large amount of development work accomplished. Working costs for the year amounted to 24s. per ton milled, as against 26s. per ton milled for the previous year. But, owing to the strike, the first half of the year must be considered abnormal, and a better comparison is seen if the period July to December in the two years is taken. For this period in 1922 working costs per ton milled averaged 21s. 2d., as against 25s. 11d. in 1921. Thus the reduction in costs achieved after the strike can be said to be about 4s. 9d. per ton milled. As the price of gold, however, declined by something like 8s. per ton milled, and as the price obtainable for gold has since still further fallen, the chairman said it was clear that the foregoing reduction in working costs was not in itself sufficient to keep up the level of recent years' profits. The chairman's explanation of the development position left nothing to be desired in point of clearness. During the past year a very large development footage has again been accomplished, the total footage being 22,357 feet. Unfortunately, the results of this large amount of development done were unsatisfactory. The estimated payable ore developed amounted to only 186,700 tons, valued at 6.9 dwts., as compared with a total of 512,000 tons milled from reserves of an estimated value of 10.4 dwts. per ton. It is therefore obvious that the permanent maintenance of the future grade of the mine at a high level is dependent upon the degree of success attained in disclosing ore in future development of a higher value than that exposed last year. In this connection it will be realised that there is much ground as yet unexplored, and that forward development headings will continue to be pushed with the utmost vigour. The increased yield during the past year is due partly to the successful efforts of the management in securing cleaner mining and partly to the large percentage of waste rock sorted out both underground and on the surface, more than 25 per cent. of the total rock broken being separated from ore sent to the mill. Of the development footage accomplished during the year under review 14,155 feet, or 63.3 per cent., was in reef formation, and of this footage only 37.8 per cent. was payable. The disappointing development in the neighbourhood of the South East shaft has temporarily, at any rate, caused the abandonment of the equipment of that shaft to take the place of the central as the main ore producer of the mine. Although patches of good ore have been discovered in that section, the outlook does not at present warrant the expenditure necessary to equip fully that shaft. Instead, the board is considering the conversion into an incline shaft of the winze connection from the central shaft to the lowest level of the mine. The future, therefore, remains uncertain, and it may be that the pursuance of the present extensive development policy will not be adequately rewarded.

Modder Deep.

Mr. P. M. Anderson's speech at the annual meeting of the Modder Deep this week began with a detailed analysis of the favourable and unfavourable factors that had affected the year's working. In the net result, "the company's strong financial position" was not altered, and the reduction of 3s. per ton in working costs augurs well for future dividends. Turning to the question of development, the chairman showed that the footage was substantially reduced, due to the strike and to the hoisting engine, the tonnage of development ore reserve is substantially greater at 4,800,000 tons, value at 9.3 dwts. over an estimated stoping width of 76 inches. The value is the same as in the previous year, but the width is one inch less. The chairman emphasised the fact that a certain amount of development was being done in exploring areas at present believed to be low-grade. This fact, coupled with the reduced footage, may lead to erratic results as to percentage payable and the value of development as published in the quarterly reports. He also drew attention to two other interesting matters mentioned in the consulting engineer's report, namely, the decision to adopt sand-filling of the workings to permit of the extraction of all profitable ore, and the installation of a mineral separation company's oil flotation unit for the purpose of improving the extraction in the sands treatment plant. In regard to the much discussed working of the Black Reef on the property, Mr. Anderson said: "I think it well to mention that some prospecting has been done in a patch of the reef which outcrops at the eastern end of the mine and has disclosed good values. The occurrence is, however, not likely to have any important influence on the value of the property, as the Black Reef is notoriously erratic and patchy in character." Mr. Anderson was able to conclude with the welcome news that there had been a further fall in working costs, coupled with increased white and black efficiency, since the beginning of this year. "This improvement," he said, "together with the return of wages to near the pre-war level and a reduction in the price of materials, has resulted in a decrease in costs from 22s. 4d. per ton milled in March, 1921, to 17s. 6d. in March, 1923. I do not think we have exhausted the possibilities in this direction."

Ore in Sight.

A correspondent of the *Engineering and Mining Journal* has recently raised in that paper the old question of "What is Ore in Sight?"

Our contemporary, in an editorial, deals with the matter in the following terms:—

A correspondent, whose letter we print, raises the old question as to the terms to be employed in estimating ore reserves in a mine. He very logically objects to limiting the phrase "ore in sight" to ore blocked out on all sides, arguing that if you can see ore, it is ore in sight, and that just because it is only shown on one or two sides it is illogical for an engineer to report that there is no "ore in sight." Of course, what the engineer means is that there is no *computable tonnage* of ore in sight; but the usage is misleading.

Indeed, those who have studied and practised the science of ore estimation long will hardly fail to agree that the only sure tonnage of ore, the only "positive" ore "in sight," is at the stage when it is in the mill bins. Until it is broken down, sampled, and weighed out, any and all estimates of value and tonnage are, *at the best*, approximations, which vary as to their accuracy according to the conditions and, above all, according to the intelligence and background of knowledge of the engineer investigator.

The personal factor in arriving at the approximate statement of ore reserves is everything. The mathematical formulas are simple, and if carried to complication, or leaned upon as safeguards, unreliable and misleading. We have seen ore exposed on all four sides, as required by the definition "ore in sight" or "positive" ore; it was "in sight" on all four sides; and yet the block of ore was not there. The drifts on all four sides had been driven on barely detectable fissures in the rock, from which fissures the mineralisation faded away in intensity. The further you went away from all four sides, the less the value, the more barren the rock.

The best mathematical formula for estimating ore, the one which we recommend, is simplicity itself. Reduce your cubic feet, after you have measured the block you want to estimate, to cubic meters, and multiply by the specific gravity of the ore to get your metric tons; then, if you do not want metric tons, convert back to English tons. This method is not only the simplest, but is the only accurate one. A cubic meter of water weighs a metric ton, and the specific gravity of any mass is its ratio to an equal volume of water; hence the formula. This method puts you up against the definite question as to how much your ore weighs, and this is an important question, for it may be all quartz or it may be all galena. It is shocking to think that the average "engineer" guesses at the weight of his ore, and, when it comes to this one of the major factors in his estimation, says, "Oh, we'll allow eleven cubic feet to the ton"; allowing himself a wild guess and then weaving that guess into his elaborate calculations.

But the mathematical formula is of minor importance compared with the factor of intelligence and the background of knowledge of the investigator. On this he must rely for the best visualization of how the ore will lie, back of the faces exposed. Ore is not like coal; it is irregular and whimsical to the highest degree. One must take into consideration the history and even the psychology of the development work and of the man who did it; and on what plan or theory he did it. One must know all that is to be known as to the laws and behaviour of ore deposits under the conditions which he finds in the problem under his hand. And in this way much avoidable error can be eliminated.

It is a fact that the average estimate of ore reserves is primitive. It is a fact that prominent engineers, examining a mine, differ widely in their results and often quite unwarrantably, for their differences are due to the sloppy way in which the average examination is made. Careless sampling, insufficient checks on assaying, guesses at specific gravity, ignorance of the habits of orebodies are often exhibited in a report to which is attached the name of a well-known engineer.

All of these things can be improved, and many a consequent disappointment avoided. The choice of terms is immaterial, and complicated formulas are usually misleading. The great thing is the maximum of accuracy, knowledge, and, above all, common sense.

Mr. Evans Gives Evidence.

The Conciliation Board appointed by the Government to consider the demand of the mine mechanics for a 30 per cent. increase in wages has been adjourned throughout the greater part of the week, but resumed the hearing of evidence on Thursday. The Board is going a good long way beyond its original terms of reference, and, as a matter of fact, appears to be reopening a good many of the questions debated at such great length by the Mining Industry Board last year. For instance, questions of Currency and Exchange as well as historical reminiscences of working costs and living expenses and matters concerning the economics of the South African Railway system are being brought within the scope of the Inquiry. Most important evidence was led by Mr. Samuel Evans, the Chairman of the Crown Mines, Ltd., at the meeting of the Board held on Friday of last week. In the course of his evidence Mr. Evans stated: "If the money put into the Rand mining industry had been put into 2½ per cent. Consols it would probably have come out better."

Asked what had been the increased costs to the industry since 1914, the witness gave the increase for the whole industry as a little over 41 millions. The only set-off being the gold premium, which totalled some 24 millions. The Crown Mines portion of increased costs to the end of last year amounted to four millions, or a net loss to the company of £2,692,000.

Mr. Evans emphasised that shortage of native labour would seriously affect the position. At the present rates of wages, salaries and costs of supplies it was likely that a considerable number of mines would have to close down if there was a shortage of boys.

Speaking of the amalgamation of the Crown Mines group, he showed that there was a number of deep level mines at the time working on 12s. 6d., 12s., 13s. 11d., and similarly low costs, at the time (in 1909).

Mr. Gemmill: And if costs were at the present level?

Mr. Evans: There would be no Crown Mines. It was only the low level of costs that achieved that amalgamation.

"As a matter of fact," the witness added, "I should apply that to the richest area on the Rand to-day—the East Rand. Had there not been low working costs there would have been no East Rand."

"A 30 per cent. increase in working costs, at the present high levels," he said "I suppose would put 24 or 25 out of the 39 mines on the Rand out of commission."

Mr. Gemmill: Really put us in the position we were before the strike?

Mr. Evans: Yes. Simply to increase the costs 5 per cent. all round would put a considerable number of mines out of commission, as things are to-day. A shilling one way or the other makes a difference between profit and loss in the case of several mines.

The really peculiar conditions of Kimberley (Mr. Gemmill elicited) started the cycle of high wages here.

A "fair wage," said the witness, was one which gave a similar award for labour and skill as other industries in the country got. As things were in South Africa, the workers were getting more than their just share of the profits of the country. He proceeded to speak on the doctrine of the "basic wage" or "living wage" as enunciated by labour organisations. An Australasian Royal Commission had investigated the subject in 1920, and submitted a report which fairly "took away the breath" of the Prime Minister. The United States Labour Board, dealing with the question, had declared that the establishment of a "standard living" for any single class would mean that the public would pay for the increased wages, and most of it would come from workers in other industries.

Mr. Gemmill drew attention to the wage position on the South African Railways, quoted as a criterion.

The witness replied that, taking the railways as a whole, they were costing 90 per cent more than in 1914.

Asked by Mr. Brown if the increase to the mechanics would mean the closing down of any mine, he said the least increase in cost would affect half a dozen mines. "The working costs of this industry are excessive to-day," he declared again. "If there is a shortage of native labour the industry cannot continue on the present basis."

Mr. Brown: You don't think efficiency would be increased by giving the mechanics this increase?

"No, I don't," was the witness's reply. In the main and in the long run, Mr. Evans informed Mr. Crisp (for the workers), high wages put up the cost of living. He held that the efficiency on the mines depended more on the supply of unskilled labour than anything else. "All through, up to the outbreak of the war," he further stated to Mr .Crisp, "my view is that the mechanic was getting an excessive rate; he had been since the Kimberley days."

"Practically the whole of the difficulty to-day and the danger to the gold mining industry," said Mr. Macfie after

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a lengthy series of questions regarding gold standards and currency matters, "arises from the attempts of European Governments to interfere with natural laws as regards the value of gold?"

The witness fully agreed.

Mr. Mactie said he recognised that the welfare of the country was not served by a policy of plunder as regarded the gold mining industry. A policy of substituting white unskilled labour for kafir work also was not one that he assented to.

"I don't think threats of closing down have been vain threats," emphasised Mr. Evans in other remarks dealing with the difference between working costs in 1913-14 and to-day.

"I look upon the position in Germiston and Boksburg district as extremely serious," he declared.

"What is the mine policy—that the industry can only continue by reducing wages?" Mr. Mactie asked later.

Mr. Evans: "Reducing costs generally."

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal will be leaving shortly for Rhodesia and Natal with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

Company Meetings.

In another part of this issue full reports will be found of the proceedings at the annual meetings of the Village Deep, Rose Deep, and Geldenhuis Deep. The meetings were held on Thursday, too late for longer notice this week, and the salient features in the speeches from the chair will be reviewed in our next issue.

* * *

Anglo-French Exploration Company.

The report of the Anglo-French Exploration Company for 1922 shows a surplus of £25,711 against a deficiency of £65,800 in the previous year. The payment of dividends will be resumed, and an interim dividend of 5 per cent. will be declared.

* * *

Trade and Industry of Finland.

Through the Consul for Finland, at Capetown, we have received from the Minister for Foreign Affairs of the Republic of Finland a copy of a beautifully produced work of reference, "Trade and Industry of Finland," which has recently been published by J. Simelius' Heirs Printing Co., Ltd. This publication is really a work of art and has been compiled at very great expense. Finland is a country of which little is known in South Africa. It is a Republic not yet five years of age, and now that it is free of the Russian yoke, no doubt it will advance with great strides, as the small population of only about three million souls is well educated and of high character.

Natal Ammonium.

We understand that arrangements are being completed for the reopening, under influential auspices, of the Natal Ammonium Company's plant at Mount M'Gwibi, in the Vryheid district.

* * *

Additional Company Meetings.

On account of extreme pressure on space in this issue the proceedings at one or two company meetings held late in the week and comments thereon are unavoidably held over.

* * *

Prospecting by Magnetic Instruments.

Methods for the locating of hidden occurrences of water, petroleum, salt and ore by electrical and magnetic instruments—or in other words underground prospecting by such means—appear to have been remarkably developed in Germany of recent years. A company, the "Gesellschaft fur praktische Geophysik," with headquarters at Kaiserstrasse 151, Freiburg, Germany, has been floated to exploit such methods. The company makes and supplies all the necessary apparatus and gives full instructions in regard to their use. It is also prepared, if necessary, to send out its own experts to give practical demonstrations, and it is prepared to appoint an agent for South Africa.

ROBINSON GOLD MINING CO., LTD.

The report of the directors of the Robinson Gold Mining Co., Ltd., for the quarter ended March 31, 1923, is as follows: Tons crushed, 42,600; tonnage mined and from surface chlorination dumps, 43,100 tons; total yield, 12,898 fine ozs.; total yield per ton 6.054 dwts; working revenue, £55,018 (25s 10d. per ton milled); working costs, £39,991 (18s. 9d. per ton milled); working profit, £15,027 (7s. 1d. per ton milled); sundry revenue, £286; total profit; £15,313. The working revenue above-mentioned, viz., £55,018, is arrived at by calculating the gold produced at the following prices: January, £4 6s. per fine ounce; February, £4 5s. per fine ounce; March, £4 5s. per fine ounce; which allow for the cost of realising the gold. The decrease in tonnage milled is due to diminishing reserves in the mine. Re-treatment of the chlorination dumps has been started.

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A Difficult Year at the Village Deep.

WORLD'S DEEPEST MINE WORKINGS—BIG REDUCTION IN COSTS—MR. E. G. IZOD'S REVIEW.

Mr. E G. Izod, the Chairman, presided at the annual meeting of the Village Deep on May 17, and in the course of his speech said:

The report of the directors, with statement of accounts, together with the reports of the consulting engineer and the manager of your mine, have been in your hands for some time, and have no doubt been carefully studied by you. The claim area of your property has again been slightly increased by the purchase from the Government of the undermining right of a further portion of the area known as La Rochelle, in extent 18¾ claims. This ground, being directly adjoining and due south of the area of 9¼ claims purchased the year previously, makes a substantial addition to our property in the south-eastern portion of our mine.

In addition to the acquisition of the La Rochelle area, certain rights have been acquired from the Government and from the City & Suburban Gold Mining Company, Limited (in liquidation) on ground situated on our eastern boundary. Arrangements are now being effected with the City Deep, Limited, for the exchange of certain ground, which will result in an adjustment of the boundary between the City Deep, Limited, and the Village Deep, Limited, and will add an area of approximately ten claims to our property. An important feature of this acquisition is that we can attack the new area almost at once from our lower existing levels.

Finances of the Company.

I will only deal briefly with the accounts, which accompany the directors' report, as they give a clear picture of our financial position. The working profit earned was £88,162. Adding to this the sum of £2,343, being balance of subsidiary revenue over expenditure on fees, donations, depreciation of investments, etc., we were able to carry to appropriation account an amount of £90,505. Adding this to the unappropriated balance of £142,081 brought forward from last balance sheet, and £54 on forfeited dividend account, we had a credit balance on appropriation account of £232,641, which we dealt with as follows:—

The net expenditure on capital account was £13,948. The purchase of ex-enemy shares absorbed £15,708, and we paid in Government and Provincial taxation £9,218. We distributed at the end of the year a dividend of 7½ per cent., absorbing £75,081, and, deducting the total of this expenditure, viz., £113,956, from the £232,641 referred to above, we were enabled to carry forward in our balance sheet for the year 1922 an amount unappropriated of £118,685. This position, I think, will be accepted by shareholders as a very favourable one, when due consideration is given to the many difficulties we had to face in the early portion of last year.

The Strike and After.

Operations for the year 1922 were considerably affected by the serious strike of white employees at the commencement of the year, and work on the mine was thoroughly disorganised for approximately nine weeks. It was not until about the end of June that the mine really recovered from the serious setback it had received; and, in order to appreciate the improvements effected as the result of the much-needed reforms being introduced, I propose to compare with the previous year's working only the second half of the year 1922, viz., from 1st July to 31st December.

The tonnage milled for the period averaged 58,200 tons per month, a record unequalled in the history of the mine. The working costs averaged for the same period 22s. 5d. per ton milled, which, compared with the figure of 29s. 5d. for the year 1921, shows a reduction of no less than 7s. per ton milled, which has been brought about by the complete reorganisation of the underground work.

The recovery yield for the second half of last year was 6·364 dwts. per ton milled, which is just a fraction higher than the previous year's figure.

The result of the whole year's working is shown in the profits declaration of £88,162, and when it is realised that the strike caused a direct loss of approximately £51,000, and that the decline in the net realised price of gold from 105s. 3d. to 89s. 11d. per fine ounce represented a fall in revenue of £132,416 on our gold output for the year 1922 it is particularly gratifying to note that our profit was only £24,584 below that declared for the previous year.

Development and Ore Reserves.

Development operations were seriously hindered by the strike and by the consequent delay in re-establishing our native labour force. Fortunately, however, it was restored sufficiently by the middle of the year to allow us to carry out our full development programme, and we were able to accomplish for the past year a footage of 16,272 feet and develop a tonnage of 559,500 tons, of an estimated value of 6·1 dwts. per ton. This tonnage enabled us to more than maintain our ore reserve position, although its value, as last calculated, is 0·2 dwt. per ton lower than for the preceding year. This slight decrease in value is mainly due to an increase in the stoping width used in calculating the reserves. The ore reserves at the end of the current year should show a substantial increase over 1922. In the past, with the system of development by footwall drives and cross-cut raises, there has always been a large body of ore in the mine developed, but not valued. A change has become necessary in the method of development owing to the need for increased ventilation facilities at the great depth to which we are now working, and consequently we shall add a considerable tonnage to our ore reserves. The recently acquired claims already referred to will also assist in strengthening our ore reserve position.

Development in the south-western section of the mine continues to expose ore of average grade. The 30th level west maintains a high percentage payability and good values. The 31st level has been driven west for 800 feet, and where sampled shows payable values. Further sampling will be done in the near future, when the boxhole raising is completed. On the south-eastern side the development in the La Rochelle area is not far enough advanced to properly gauge the value of this ground, but exposures from the 30th level in this area are somewhat disappointing. A winze from the 31st level in this section of the mine has given to date 646 inch-dwts. for 45 feet sampled, which is encouraging. Payable values have been disclosed in the drives which have entered the ground recently acquired by arrangement with the City Deep, to which I referred in the earlier portion of my remarks. Our capital expenditure programme for the past year was delayed somewhat by the strike and subsequent reorganisation, and instead of an amount of over £16,000 being required for equipment, etc., as forecasted in my last address to you, we spent only £2,828 on property, and £1,738 on equipment.

Recent Results.

I will now deal briefly with the current year's work to date. The tonnage milled for the first four months of the year was 227,700, or an average per month of 56,920 tons. The average monthly cost per ton milled at 22s. 11d. was slightly higher than for the last six months of the past financial year, and is accounted for partly by reason of the reduced tonnage milled in February, and partly by extra expenditure incurred during March and April in replacing a temporary hoist by a permanent hoist at the head of the Turf Incline, and in re-equipping the North Whiting Compartment of the Turf Shaft with steel guides. The average recovery yield for the first four months of the year at [illegible] dwts. was slightly lower than for the previous year and the profit earned was [illegible].

Fall in Gold Premium.

I referred earlier in my remarks to the very heavy decline in our revenue which was brought about by the fall in the price of gold. For the first four months of the year our gold has been valued at 88s. per fine ounce, and after deducting realisation charges and exchange charged by the banks on remittance from London to Johannesburg, the net value of gold taken for assessing our revenue is only [illegible] per fine ounce, which is so near to parity as to make the advantage from the higher price of our product almost negligible. Had the cost of producing our gold remained at the December 1921 figure of 76s. 8d. per fine ounce, it would have been a very serious outlook for our company. The cost for the first four months of the current year averages 71s. per fine ounce, so that we now have the very necessary margin to allow us to continue making reasonable profits.

The capital expenditure programme for the current year entails the spending of approximately £16,000 on construction and equipment items which were not proceeded with last year. The expenditure on the hoists and equipment for the second stage incline will not be incurred this year, but will probably come into the following year's programme.

The Main Incline from the bottom of the Turf Vertical Shaft has been sunk to its full depth, and the lowest point is [illegible] feet vertically below the collar of the shaft. All stations down to the 33rd level, which is the lowest level at present in the mine, have been cut, and work will be started very shortly on actually sinking the second stage incline. The work of cutting bins and preparing the pump chambers has made good progress during recent months.

Technical Improvements.

The continued use of jackhammers has been largely instrumental in reducing our mining costs to a low level, but there is increasing need for economy in every direction. It must never be forgotten that we have a difficult mine to operate, and that we are mining at a greater depth for our output than any mine in the world. With increased depths come increased costs in so many directions that I can hardly enumerate them, but we are continually improving our methods and seeking new ways and means of making economies; were this not so, costs would increase so rapidly that with only a medium grade ore to mine, such as we have, there would be little chance of making profits. Improvements in the treatment and handling of drills and drill steel have been of the greatest assistance to our mine, amongst many others on these fields, and with the special study being given by experts to the all important question of the costs of breaking ground, we look forward with confidence to a maintenance of low costs. You will have seen from the Directors' report now before you that the company last year purchased 59,588 ex-enemy shares, which were under the control of the Custodian of Enemy Property of the Union of South Africa. These shares, together with 970 similar shares purchased since that date, have been transferred into the names of two of your Directors in trust for the company, and a deed of trust and irrevocable power of attorney have been duly executed, fully protecting the company.

Mr Whitehouse, who managed our mine so efficiently for many years, has been transferred to our Head Office as consulting engineer to the Central Mining and Investment Corporation, and will continue to advise our company in a consultative capacity. We have appointed Mr Tillard, who was underground manager of the New Modderfontein Gold Mining Company, Ltd., as our manager, and I am confident that under his guidance the efficient control of our mining operations will be continued.

We also wish to express our thanks to our staff and to Mr Coe and Mr Townsend, who have each acted as manager during certain portions of the past year.

I now beg to move that the directors' report and balance sheet for the year 1922 be received and adopted.

The report and accounts were adopted.

New Witbank Power Station.

V.F.P. COMPANY'S ENTERPRISE—TO COST A MILLION POUNDS.

The important announcement is made that the Victoria Falls and Transvaal Power Company has in contemplation the erection of a new and large Power Station on the Witbank Coal Field. The station will, it is estimated, cost a million sterling in one way and another, that is to say in regard to plant and transmission lines, etc., etc.

WHERE A NEW MILLION POUND POWER PLANT IS TO BE ERECTED.

A Scene on the Witbank Coal Field.

It has been known that for some time past technical officials of the V.F.P. Company have been engaged in England on the details of such a scheme, and it is now stated that contracts for the plant are being placed and that it is hoped the station will be running in about two years' time.

The object of the installation will be to cope with the increasing demands of the gold mines and particularly the Far East Rand mines for power. According to "The Star" the transmission will extend to something like 70 miles, taking Brakpan as an objective. The power station itself will probably be about the same size as that at Vereeniging. The Power Company has applied to the Electricity Control Board for the necessary amendments to its licence under the Electricity Act to enable it to establish this power station. A plot of ground on the southern border of Witbank Farm and about one and a half miles from the town has been secured.

The power station will initially comprise three turbine driven electric generating units, each having a capacity of more than 20,000 horse power. The pressure at which energy will be transmitted to the Rand will be at from 120,000 to 135,000 volts, which is 50 per cent. higher than at present in use between Vereeniging and the Rand. The station may ultimately require as much as 750,000,000 gallons of water annually, and application will be made to the Water Board for permission to take that quantity from the Oliphants river.

As previously stated, the fuel for consumption at this power station will take the form of "duff" coal drawn from the neighbouring collieries, and the power station has been so planned and will be so connected by sidings or other means of haulage as to facilitate the handling of the coal and minimise the cost of transport.

Modder Deep Levels.

CHAIRMAN'S REVIEW OF VARIATIONS IN YEAR'S OPERATIONS.

The annual general meeting of the Modderfontein Deep Levels, Limited, was held in the Board Room, Consolidated Building, Fox Street, Johannesburg, on the 15th May, Mr. P. M. Anderson presiding. In moving the adoption of the directors' report and audited accounts for the year ended 31st December, 1922, the Chairman said: In submitting the reports and accounts for the year it is usual to make comparisons with the working results obtained during the preceding year. When the scale of operations is similar for the two periods such a comparison affords an easy means of detecting the variations in detail which contribute to any alteration in the dividend distributed to shareholders. On this occasion it is necessary to look more closely into the position, and, in order that the results may be viewed in their proper perspective, I will here mention the unfavourable and favourable factors which contributed thereto. There were three of each, and the latter negatived about two-thirds of the effect of the former.

Unfavourable Factors.

The unfavourable factors were: Firstly, the general strike of European mine workers on the Rand, which resulted in the closing of our mine for rather more than two months; secondly, the accident to the rock-hoisting engine, which prevented the hoisting of ore for a further seven weeks; and lastly, the serious fall of 13s. 5d. per ounce in the average selling price of gold. This last factor alone would more than account for the decrease in the dividend. The premium on gold last year was £84,517, as against £287,290 in the preceding year. But the effect of the first two factors was even greater, as they entailed a loss in hoisting time of nearly four months, with a consequent reduction in ore stoped of nearly 200,000 tons, or one-third of the 1921 total.

Favourable Factors.

The favourable factors which I would place before you were: In the first place, the existence on the surface of the dump of ore containing some 175,000 tons, of which 102,000 tons were used during the period that the hoisting engine was out of commission and for a short period during the strike. The second item on the bright side of the picture is the reduction in Provincial taxation of nearly £33,000, due to the abolition of the Provincial Gold Profits Tax Ordinance, 1918, and the substitution therefor of the Employers' Tax Ordinance, 1922. The last favourable feature, and the one to which I would particularly draw your attention, is a reduction of 3s. per ton in the working costs, not only because of its effect on last year's profits, but also because of its influence on future dividends.

The Profit Aspect.

On reference to the reports and accounts before you, you will see that the year's operations resulted in a total profit of £693,113, or nearly £240,000 less than for the previous year. After providing £38,040 to meet expenditure in connection with the strike, and £94,192 for taxation, as well as £3,050 for charitable donations and depreciation, the balance of £557,831 was carried to appropriation account.

Two dividends, totalling 120 per cent. on the capital of the Company, were declared for the year, and an amount of £6,463 was appropriated for expenses in connection with the purchase of ex-enemy shares. The unappropriated balance at the end of the year was £129,824, being £49,632 less than the amount brought forward from the previous year's account. You will agree, I feel sure, that this reduction is entirely justified in view of the Company's strong financial position, more especially as most of it was to meet abnormal expenditure in connection with the strike and the purchase of ex-enemy shares.

Development.

With regard to the development of the mine, you will see from the technical reports that, although the footage advanced shows a substantial reduction due to interruptions on account of the strike and the accident to the hoisting engine, the tonnage of developed ore reserves is substantially greater at 4,800,000 tons, valued at 9.5 dwts. over an estimated stoping width of 76 inches. The value is the same as in the previous year, but the width is one inch less. In view of the large ore reserves, which stand in the balance sheet at 9d. per ton, it is unnecessary to spend money on further increasing them. Therefore, on the recommendation of the Consulting Engineer the rate of development work has been reduced from the beginning of the current year, without, it is hoped, reducing the ore reserve position. The charge to working costs has also been reduced from 1s. 6d. to 1s. per ton milled, which is sufficient to cover current expenditure.

As pointed out by the Consulting Engineer, a certain amount is being done in exploring areas at present believed to be low-grade. This fact, coupled with the reduced footage, may lead to erratic results as to percentage payable and the value of development as published in the quarterly reports.

Some Novel Features.

I draw your attention to two other matters mentioned in the Consulting Engineer's Report, namely, the decision to adopt sand-filling of the workings to permit of the extraction of all profitable ore, and the installation of a Minerals Separation Company's Oil Flotation unit for the purpose of improving the extraction in the sands treatment plant.

For the purpose of transferring the sands dump to the underground workings a borehole is being put down by means of a shot drill, and should reach the desired point towards the north-western corner of the mine at a depth of about 2,700 feet. I am given to understand that this is the deepest borehole for this purpose yet attempted by means of a shot drill.

The installation of the Oil Flotation process is now in hand, but it is not expected to be in operation until towards the end of the year. The cost of the installation, which is now being charged to working costs, should be recovered within two years out of increased revenue. Apart from this, however, it is hoped that the information gained from the use of the process in connection with the sands plant may lead to its extended use in other directions.

The Black Reef.

Various rumours having been in circulation from time to time in regard to the occurrence of the Black Reef on the property, I think it well to mention that some prospecting has been done in a patch of the reef which outcrops at the eastern end of the mine and has disclosed good values. The occurrence is, however, not likely to have any important influence on the value of the property as the Black Reef is notoriously erratic and patchy in character.

As regards the current year's operations, which have resulted in a gross profit of about £250,000 for the past four months, there are no outstanding features except for a further fall of about 3s. 6d. per oz. in the price of gold and a further reduction in working costs of 1s. 3d. per ton milled. This latter feature is, as I have already mentioned, most gratifying. It is very largely the outcome of the strike last year. Since then there has been a considerable improvement in the output of the underground European employees, which, in turn, has had a beneficial effect on the native labour force. Comparing March, 1923, with March, 1921, when approximately the same output of work was done, I find that the output in tons mined per European employed underground has risen 22 per cent., while the corresponding figure for natives has increased 16 per cent. This improvement, together with the return of wages to near the pre-war level and a reduction in the price of materials, has resulted in a decrease in costs from 22s. 9d. per ton milled in March, 1921, to 17s. 6d. in March, 1922. I do not think we have exhausted the possibilities in this direction.

It is with great regret that I have to record the death during last year of Mr. William Ross, who had been a Director of your company since 1913. The loss of his valued assistance is greatly felt by his Co-Directors, and I feel sure it is your wish to endorse the expression of sympathy which has been conveyed to his relatives.

The vacancy thus created has been filled by Sir William Dalrymple, who needs no introduction to you. You will be asked later to confirm his appointment.

It is with a keen sense of loss that I have to inform you of the retirement at the end of last month of your Manager, Mr. J. D. F. Schleiss, owing to ill-health. He has been a valued official not only of the company, but of the Group for many years. His place has been taken by Mr. E. P. Cowles, the Underground Manager, who has held responsible positions on other mines of the Group, and in the Head Office during the past twelve years.

In conclusion, I have pleasure in expressing the Board's high appreciation of the efficient services rendered by all employees of the Company, and I wish particularly to mention the Consulting Engineer, the Manager, and the officials at the mine, to whose zeal and ability we owe so much in overcoming the difficulties of last year.

The report and accounts were adopted.

S.A. RAILWAYS AND HARBOURS.

New Works Authorised.

Burghersdorp.—Installation of Electric Light in the Station Building, Yard and Quarters.

Windhoek.—Remodelling of the Water Scheme.

Brak River—De Aar.—Provision of a 6 in. pipe line between Brak River and De Aar for Water Supply.

Walvis Bay.—Improvements to the Harbour.

Table Bay Harbour.—Provision of Additional Accommodation for Coal Traffic.

Table Bay Harbour.—Adaptation of two 4-ton Electric Jib Cranes for Electric Travelling Crane and transfer to Amsterdam Yard for Coal Traffic.

OTAVI MINES & RAILWAY.

Shipments for 12 months ended March 31: Total ores, 31,650 tons (comparing with 36,820 in the preceding 12 months); copper matte, 4,200 tons (2,090); metallic lead, 690 tons (315). Smaller quantity of ores shipped is due to larger quantity treated in smelter on spot.

THRIFT ALONG THE EAST RAND.

The Witwatersrand has never been notorious for the thrift of its inhabitants, and particularly so in the case of mine workers along the Reef. During the period of post-Armistice extravagance and high wages it was frequently pointed out that the amount of money invested in Union Loan Certificates by the people of the Transvaal, and especially people of the Rand, compared very unsatisfactorily with the amounts invested by other Provinces of the Union. It is, therefore, interesting to note that in the months of January, February and March of this year about £30,000 has been invested in Union Loan Certificates by Germiston, Boksburg and Boksburg North, Benoni, Brakpan and Springs. Upwards of £18,000 was invested during the month of March. These figures would seem to indicate that there is not quite so much poverty along the Reef as some people contend, and they also suggest that since the strike and the reorganisation of work, a good many employees of the mines have found Government securities a better investment than "Non-Triers" at a racecourse.

SELECTED NEW PATENTS.

Ezekiel Davidson. Method of dealing with certain lime deposits.

John Smith.—Automatic or self-acting tipler loaded trucks, so as to empty their contents on to a belt, chute or otherwise.

Reginald Dudley Baumann. Improvements in extra air devices for internal combustion engines.

Hugh Hunter Barr.—Coach screw-driving machine.

Gottfried Andreas Watermeyer.—Improvements relating to chains for surveying and like purposes.

Mark Morrison, Thomson Denholm Vass, and Arthur Churchill Fisher. —Improvements in locking nuts.

Harry August Stockman.—Improvements in machines or apparatus for crushing or reducing minerals and other materials.

Arthur May and Ernest May.—An improved tool for fixing wire clamps around hose or similar pipes, and for securing other like fixing devices.

Albert Ernest Lintott and The Central Engineering Works, Ltd.—An improved union for pipes and the like.

Alexander John Arbuckle. Improvements in apparatus for concentrating ores or the like.

THE RANDFONTEIN SHAFT ACCIDENT.

In connection with the inquiry into the recent collapse of the Block A shaft, Randfontein, the Resident Magistrate of Krugersdorp and the Inspector of Mines have found that the fall of rock was accidental and that no one could be held to blame.

Rhodesian Chrome Ore.

There is at present a considerable demand for Rhodesian chrome iron ore, and the Selukwe Mines are sending away over 300 tons of ore per working day.

GOLD MINE FOR TRIBUTE

The owners of the WINDHEUVEL GOLD MINE, near Ottoshoop Station, Malmani Gold Fields, are prepared to let the mine on tribute to *bona-fide* operators.

About 14,000 tons have been treated yielding between six and seven dwts. per ton. Tribute basis, 5 % on all gold recovered, with option to pucrhase for cash and interest.

Full particulars can be obtained, documents and reports examined, and the mine inspected on application to **HILL & PADDON, LTD., KIMBERLEY.**

The Greater Geduld Proprietary Mines.

SERIOUS CAPITAL EXPENDITURE AT AN END—ERA OF SUBSTANTIAL DIVIDEND DISTRIBUTION IN SIGHT.

The annual general meeting of the Geduld Proprietary Mines, Limited, was held in the Board Room, Consolidated Building, Fox Street, Johannesburg, on the 15th May. Mr. P. M. Anderson presided. In moving the adoption of the directors' report and audited accounts for the year ended 31st December, 1922, the Chairman said: An increase of nearly a shilling per ton in the yield, taking gold at its standard value, and a decrease of about 3s. 2d. per ton in the working expenses, are the features of the past year's operations revealed by the reports and accounts in your hands. Under ordinary circumstances such results would have produced a considerable increase in the working profit, but unfortunately the benefits were more than offset by the falling price of gold and the loss of tonnage during the strike period. The net premium obtained totalled only £57,777, as against £196,650 for the previous year, part of this decrease of £138,873 being, of course, due to the lower tonnage treated. The loss of mill tonnage due to the strike is estimated at 87,500 tons, and, despite greatly improved efficiency all round since the resumption of operations, it has not been possible to reduce this by more than 10,400 tons, leaving a net deficiency of 77,100 tons as compared with the previous year.

The Year's Profits.

The total profit for the year was £322,625, or £63,500 less than in 1921. This represents a drop of 4¼d. per ton milled, which must, I think, be considered highly satisfactory, bearing in mind that the gold premium fell to the extent of 1s. 9½d. per ton milled. On referring to the directors' report, you will note that, out of the profit of £322,625 provision had to be made for the following charges:—Expenses during the strike period, £53,757; taxation, £32,780; expenditure on development in excess of the amount charged to working costs, £16,125; expenses in connection with the purchase of ex-enemy shares, £10,633, and sundry smaller items, the total amount appropriated being £118,065. Two dividends, totalling 16¼ per cent., were declared, and the appropriation account balance carried forward to this year was £118,219. This figure is £11,248 less than the amount brought in from the previous year. You will agree, I think, that the financial position of the company fully justified this small encroachment. The expenditure on capital account during the year totalled £187,192, and the balance of working capital available at the end of the year was £149,673. You are no doubt aware that the capital expenditure programme is nearing completion, and it will be gratifying to you to know that the funds in hand for this purpose are sufficient.

Development.

The reports of the manager and the consulting engineer give full particulars of the development of the mine. From these you will see that, though the footage was restricted in the first half of the year as a consequence of the strike, the re-measurement of the ore reserves at the 31st of December showed an increase of a quarter of a million tons, while the value was maintained and the width slightly increased. During the recent past most of the development work has been taking place in three main areas. These are: Firstly, towards the north-eastern corner of the mine from the 2nd to the 6th levels, where the ore exposed is of moderate value, but on the whole distinctly payable; secondly, an area near the middle of the property on the 4th level from the intermediate incline, where values have been consistently high-grade; and thirdly, the area around No. 7 shaft from the 6th to the 8th levels. The 6th level westwards has disclosed uniformly high-grade ore, while eastwards it has been poor. The 7th level east is in faulted ground, but a raise from the end of the level is exposing good ore. The west drive has been poor and the winze therefrom very erratic in value. The 8th level has been low-grade with recent signs of improvement. In the area around No. 7 shaft there were developed at the end of the year just over a million tons of high-grade ore.

Ore Reserves.

The ore reserves as re-measured at the end of the year amounted to 3,800,000 tons, valued at 8·1 dwt. over a stoping width of 63 inches, and, in addition, your consulting engineer estimates that there were developed in the mine at the same date a further 2½ million tons of payable but lower-grade ore valued at 4½ dwts. over a stoping width of 62 inches. The total available tonnage is therefore 6,300,000 valued at 6·6 dwt. When addressing you last year I stated that it was not intended that ore of this average stope value should be sent to the enlarged plant, but rather to rely upon being able to maintain a supply of the higher-grade ore. In the report of the consulting engineer, which was issued to shareholders about two months ago, he states that the development prospects are sufficiently bright to anticipate that the present grade of ore milled can be maintained with the enlarged plant. I draw particular attention to these statements, as I am still receiving inquiries from shareholders as to the policy it is proposed to pursue in this connection.

The Enlarged Plant.

Although all details are not yet completed the enlarged reduction plant was put in commission three weeks ago, and is running satisfactorily. As you are aware, the capacity was estimated at 65,000 tons per month, but, though it is too soon to prophesy, it would not surprise me if this figure were exceeded by at least 5 per cent. in two or three months' time without impairing the extraction aimed at. You will have noticed from the manager's report that the percentage of extraction last year was low. This was due to running the cyanide plant considerably beyond its capacity, a condition of affairs which has now been remedied. The enlarged reduction plant is more in keeping with the area of the property, and the increased scale of operations should lead to a material further decrease in working costs. Furthermore, serious capital expenditure is at an end, for the time being at any rate; consequently shareholders may look forward to a substantial advance in the dividend-earning capacity of the mine. When the additional plant came into operation two new features were introduced, namely, zinc dust precipitation was substituted for the old extractor boxes, with satisfactory results, and amalgamation of the ore was abandoned. Whether the latter experiment will also be satisfactory it is too early to say with certainty, though it is confidently anticipated that this will be so.

Current Year's Results.

As regards the working results during the current year, up to the end of last month 186,500 tons had been milled yielding an estimated gross profit of £122,000. This figure is rather higher than the published return, as the price actually realised on gold sales has been higher than the monthly estimates. The yield at standard value improved seven pence per ton milled owing to an increased proportion of ore being drawn from the No. 7 shaft area, which, however, is not yet supplying its full quota. Working costs at 20s. 4d. per ton milled give a figure slightly below that of 1922. The total development footage was 8,137, of which 5,250 feet were sampled and showed an estimated payability of 1,905 feet, for which the value was 599 inch dwt., or rather better than the ore reserves.

Towards the end of last year the right to establish a Township on the property was obtained, and this has now been laid out. It is 92 morgen in extent and has been named Geduld Extension Township. A large number of the business stands have been sold at satisfactory prices. It is intended to erect in this Township the further housing accommodation required for employees.

Before moving the resolution I desire to express on behalf of the Board of Directors their high appreciation of the efficient services rendered by all employees of the company. I wish particularly to thank the Manager and Officials at the Mine, as well as the Head Office staff, for their signal service during the critical times passed through last year and for the manner in which they have carried out the new construction work.

The report and accounts were adopted.

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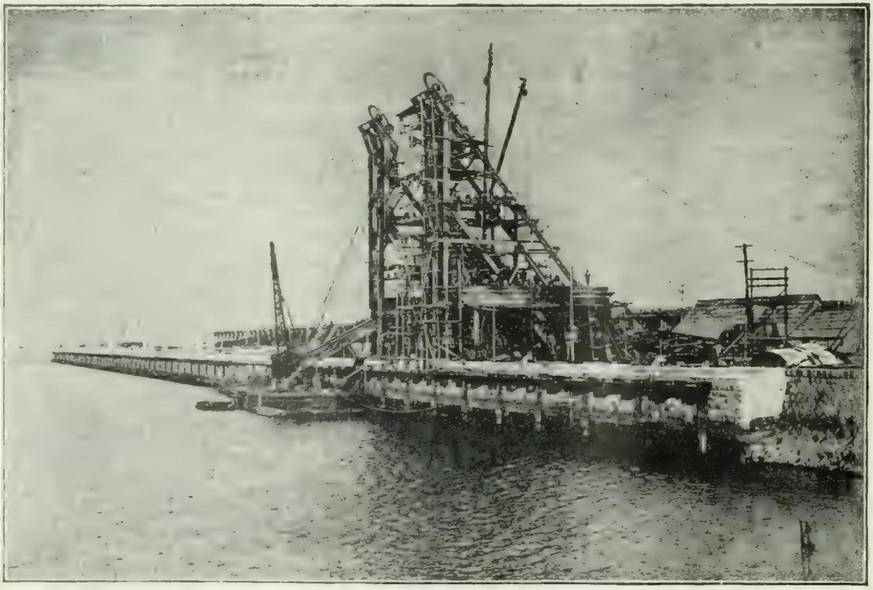

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The Week in the Sharemarket.

PRICES MARKED DOWN—DIAMONDS DULL—HEALTHIER POSITION.

The past week has been an unfortunate one for the market, prices in almost every instance being marked down. No outstanding cause was responsible for the decline, but there is so much uncertainty in the political world that operators have held aloof, with the result that weak holders have been forced to realise under adverse conditions. No support was apparent. The heavy liquidation has been in the favourite shares, such as Crown Mines and Randfonteins, but at the present moment some resistance is being shown. New States have been fairly heavily sold in view of trouble said to be encountered at the mine in the working of the new plant. This, however, is always the case at the starting up of plant, and although there are undoubtedly some new features in this instance, there is no doubt that all of these troubles will be overcome. There was big dealing in Randfonteins to liquidate heavy accounts, and the same may be said of Crown Mines. Nourse Mines at one time had no buyers, and sellers forced the price down in consequence. The Anglo-American Group have been lifeless, but remarkably firm in the case of Brakpans, and West Springs. Union Corporation stocks suffered a little from liquidation and Gedulds have been offered without finding much response. In view of the improving news from the mine, a better price should be seen for this share.

Diamonds have been uninteresting. There is said to be a deal in hand with regard to New Elands which might lead to change of control. Consolidated Diamonds have had more business than the others, but in a "tired" way. Diamond shares have suffered the same gradual decline as gold shares, moving no doubt in sympathy with the general dullness of the market.

Tin shares have nothing about them requiring comment. The price of the metal has declined. The news from Zaaiplaats is said to be satisfactory so far. There has been little doing in Industrials.

Loans and Banks have been rather more enquired for. Bids have been made for both National Banks and Standard Banks, and the Reserve Bank shares have been steady throughout the week.

In view of the heavy liquidation which has taken place, the market is now in a more healthy state than a week ago. The number of time bargains open has been greatly reduced, and in a small way the Bears opened their accounts. Any slight revival from London would send prices here up sharply. On the other hand, should the markets remain in their present stagnant state for a little time longer, a further fall is inevitable. At present there are signs that prices are near the bottom. It is improbable that the large financial interests wish to participate before exchange rates are on a better basis, but as the time for adjustment of exchange is not far distant, a stiffening of prices might commence in anticipation of much more active markets.

	Fri. 11th.		Sat. 12th.		Mon. 14th.		Tues. 15th.		Wed. 16th.		Thurs. 17th.	
Anglo-Am. Corp.	24	9	24	3	24	3*	24	0	24	1	23	9*
Apex Mines	—		6	0*	6	0*	6	6	6	6*	6	0*
Aurora Wests	—		5	6*	6	0*	5	6*			6	0
Brakpan Mines	67	0*	66	6	67	0*	68	0+	67	3	66	[illegible]
Brick and Potteries	—		2	6*	—		—		—		—	
Bushveld Tins	0	3*	0	4*	0	3*	0	4*	0	5*	0	4
City and Subs.	3	0+	—		—		—				2	6*
City Deeps	51	0	50	3*	50	6*	50	6*	50	0*	50	0
Clydesdale Colls.	—		—		17	3+	17	3+	17	3+		
Con. Diamonds	23	3*	22	9	22	9*	22	9	22	6	22	6
Con. Langlaagtes	13	3	13	3*	13	3*	13	0*	13	0	13	0*
Con. Main Reefs	9	0*	9	3	8	9	9	3	9	1	9	3
Coronation Colls.	27	6	27	0*	27	0*	27	6	26	0*	25	0*
Do. Freeholds	—		—		—		—		0	5*	0	6
Do. Syndicates	5	6*	5	6	5	6	5	6*	5	8*	5	8
Crown Diamonds	6	4	6	1	6	2	6	3	6	2*	6	1
Crown Mines	50	6	49	9	49	9	49	0*	49	0*	48	3*
Daggafontein Mines	3	0	3	0	3	0*	3	0*	3	1	3	1*
Durban Rood. Dps	16	[illegible]	16	5	16	3	16	0	15	10*	15	9
East Rand Coals	1	1	1	1*	1	1*	1	1+	—		1	0
East Rand Deeps	0	7	0	6*	0	7*					0	6*
East Rand Minings	10	0+	10	0+	10	0+	10	0+			10	0+
East Rand Props	5	3*	5	5*	5	2*	5	3	—		5	[illegible]
Eastern Golds	0	6			0	6			0	1*	0	6*
Ferreira Deeps	7	6+	7	6+	7	6+	7	6+			7	6+
Frank Smith Dmds	3	6	3	6*	3	6*	3	6*	3	7*	3	6
Geduld Props	63	0	62	9*	63	3	62	3*	63	0+	61	0*
Glynn's Lydenburg	13	6*	13	6*	13	6*	13	0*	13	6*	12	0*
Govt. Areas	109	3	109	0	109	0*	109	0*	109	6*	109	3*
Hume Pipes	10	0+	8	6*	8	6*	9	0*	9	3*	9	3
Knight Centrals	5	8*	5	8*	5	10*	5	9	5	9*	5	9*
Lace Props.	8	0*	8	0	8	3	8	3*	8	3	8	3*
Langlaagte Est.	19	9*	20	3	20	0*	20	0	19	9*	19	6*
Leeuwpoort Tins	2	7			2	9*	2	10*	2	10	2	9*
Lupaardsvlei Est	5	0+			—		—		—		—	
Lydenburg Farms	—		3	0			2	9*	2	9*	—	
Middelvlei Estates	—		1	0*	1	6*	—		1	0*	1	0*
Modder B.'s	24	6*	24	6	24	3*	24	6	24	6	24	3*
Modder Deeps	13	0*	13	6	13	6	13	0	13	3*	13	0*
Modder Easts	6	3	6	0*	6	1	6	0	6	1	6	0*
Natal Navig. Colls.	—		—		26	6*	26	6*	27	0*	27	0
National Banks							—		170	0*	—	
New Eland Dmds	12	6*	—		11	3*						
New Era Cons	—		6	0	6	3*	6	3*	6	0*	6	0
New Geduld Deeps					0	6*	0	6*	—		0	6*
New Kleinfonteins	4	6	5	0+	4	0*	4	3*	4	5	4	6
New Modders	78	0*	78	0*	78	0*	77	[illegible]	77	9*	77	6*
New Primrose	2	6*	2	6*			2	6	2	0*	2	0*
New State Areas	35	0*			36	0	35	3	35	6*	35	3
Nourse Mines	14	3	14	3	14	0*	13	9*	13	9*	14	0
Pretoria Cements	12	0+			—		12	6+	12	6+	11	0*
Rand Collieries	—						—		1	0*	1	3
Rand Nucleus	—		—		0	10*	0	11	0	10*		
Randftn Centrals			14	6*	15	0+			—		15	6
Do. Estates	20	3	19	9	20	0	19	9	19	10	19	6
Rouxville Diamonds	1	0*	1	1	1	6+	1	1	1	3	1	0
Roberts Victors	8	0+	7	9	8	0+	8	3	8	0	8	3+
Robinson Deep "A"	33	6	34	0	34	6	34	0*	34	3	35	0+
Robinson Deep "B"	11	3*	11	3	11	1*	11	0	10	9*	10	6*
Rooibergs	—		3	6*	3	9	—		3	6*	3	0*
Shebas	3	0	3	0*			3	0*	3	0*	3	0
S.A. Breweries	31	6*	31	9	31	9*					30	0
Simmer and Jack	3	0	2	11*	3	0	3	0*	3	0	3	0
S.A. Lands	5	5	5	4*	5	7	5	6*	5	6*	5	6*
S.A. Reserve Bank	£136*		£136*		£136*		£137+		£137+		£136*	
Springs Mines	18	0*	17	6*	17	6*	17	6	17	3	16	6
Sub Nigels	9	1	9	1*	9	1*	9	3	9	3	9	6
S.A. Alkali	14	0*	15	0+			15	0+	14	9+		
S.A. Townships	10	6*							10	6*	10	9+
Transvaal Lands	18	0+	17	0	—							
Trans. G.M. Estates	8	6	8	6*	8	0	8	9+	8	0*	8	0
Transvaal Silvers	15	3	15	0	15	0*	16	0*	16	0	—	
Union 5 per cent	£102*		£102*		£102¼*		£102		£102*		£102	
Van Dyks			1	6+	1	6+	1	6+			1	6+
Van Ryn Deeps	67	0	67	3	67	6	66	0	67	0*		
Van Ryn Estates	16	0+	—		16	0+	—					
Village Deeps	12	3	12	0	12	3*	12	0*	12	0*		
West Springs	19	4	19	[illegible]	19	3	19	0*	19	3	19	0
West Rand Cons.	—		—		[illegible]		—		—			
Western Rand Est.	3	0*	3	0+	3	0						
Witbank Collieries	28	9+			29	6*	29	0	29	0	29	0
Witwatersrands	24	6	24	9	—		—		24	9*		
Wit. Townships	15	6	15	6*	15	[illegible]	15	3*	15	6	15	0
Zaaiplaats Tins	5	7	5	7*	5	7	5	10	5	6	5	0

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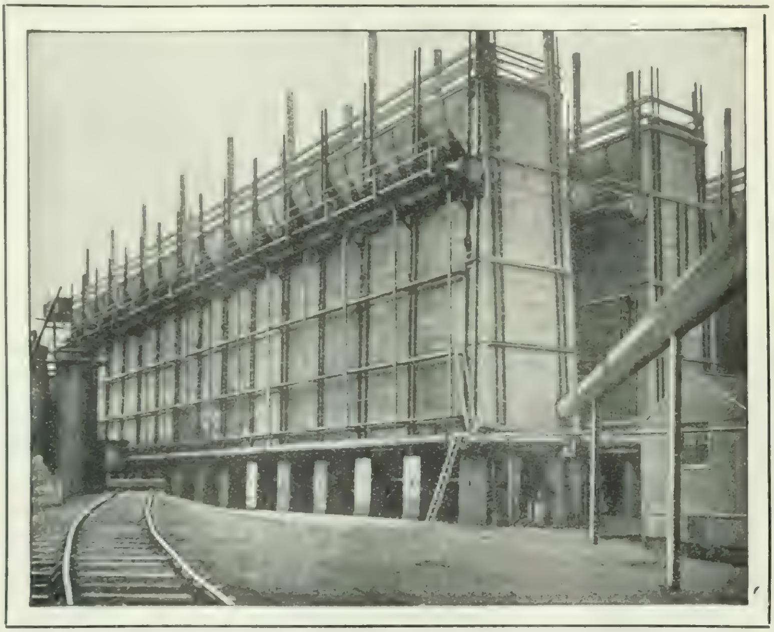

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The Outlook for the Geldenhuis Deep.

FUTURE CONDITIONED BY WORKING COSTS — LARGE BODY OF LOW GRADE ORE— CHAIRMAN'S PLAIN STATEMENT OF THE FACTS.

Mr. E. G. Izod presided at the annual meeting of the Geldenhuis Deep on May 17, and in the course of his speech said:—

The reports, with balance sheet and accounts, have been in your hands for some time, and you will have observed that operations during the past year have resulted in a working loss of £35,437.

This heavy loss was the inevitable result of the strike of our white employees, which took place during the early portion of the year; and the first three months of the year, with almost complete cessation of operations for a period of nine weeks, involved the company in a direct loss of £55,333. In addition to this heavy expenditure, there was a reduction in the price of gold of 15s. per fine ounce, and this decreased our revenue by £96,212; so that, were it not for the marked reluction in costs, which was brought about by the after-strike organisation, and which enabled us to make moderate profits for the latter half of the past year, the net loss on the year's working would have been so great that the company would almost certainly have had to cease mining operations.

Half-Years Compared.

The first half of the year 1922, being an abnormal one, I propose to compare only the last six months of 1922 with the previous year's working, as, by so doing, you will be better able to gauge the important bearing which the very necessary reorganisation has had on the operations of the company, in that it enabled the company to once again enter the profit-making stage, even though the monthly profits were small. The working costs for the period July to December, 1922, at 21s. 6½d. per ton milled, were 6s. 5½d. less than for the previous year, which showed a figure of 28s. per ton milled. This marked reduction in our working expenditure enabled the mine to earn for the latter half of the year (excluding a proportionate amount due on undervaluation of gold) a profit of £19,667, which was, however, not sufficient to counterbalance the heavy losses caused by the strike, which resultel in a total loss for the year of £35,437, already referred to. The profits for July to November, 1922, were maintained at between £3,500 and £4,000 per month, but in December, in spite of our working costs being down to 21s. 4d. per ton milled, there was a decline in the price of gold by 3s. per ounce, and this, added to heavy realisation charges principally on account of exchange charged by the banks on remittances from London to Johannesburg, caused our profit to fall to £717 for the December month.

The grade of ore mined, as reflected in the recovery for the past year, was slightly lower than in the previous year, and you will have noticed the steady decline in this figure of yield, which, with the falling price of gold, makes the question of low costs of such vital importance to the mine if we are to continue working on even the smallest profit-making basis.

Development.

Although our development was naturally hindered by the strike, it will be seen that for the past year a footage of 7,261 feet was accomplished. A word in connection with the development will perhaps be of interest to shareholders. When, after the strike, it became apparent that the mine could reasonably be expected to make small profits, the question of exploring the south-western portion of our mining area, viz.: that between the 19th level and the southern boundary, was carefully gone into. In this section of the mine there were prospects of opening up South Reef of a payability at least as good as in the upper levels of this section, and it was, therefore, decided to reopen the 20th and 21st level drives, and continue them in a westerly direction. Good progress has been made with the driving, but it will be some little time before sufficient information is obtained to value this block of ground. This area is the only one of any magnitude yet to be developed, although there is a large amount of internal development always being accomplished. By "internal development" I mean the further exploitation of medium size blocks of ore which, in the past, with the high costs prevailing, have been hardly worth fully developing. Some success has accompanied this policy, and certain blocks of ore, which were classified as unpayable, have, on further opening out, given sufficiently payable indications to warrant mining on a moderate scale. The ore reserve position, as disclosed by the calculation at the end of the past year shows a small reduction of about 30,000 tons, and a fall in value of 0·8 dwt. Had it not been for the lower costs now obtaining, which enabled us to include a certain amount of lower grade ore in our reserves, the tonnage would have been much lower than stated above.

Financial Position.

There is need for only a brief reference to the accounts, which are fully dealt with in the directors' report. The working loss for the year was £35,437. Adding to this a loss of £455, being excess of expenditure over revenue on certain subsidiary items as shown in the accounts, there was a total loss of £35,892 to be debited to the balance unappropriated of £161,657, as brought forward from the previous year's balance sheet. Adding to this an amount of £115 on account of forfeited dividends, and deducting £405 net expenditure on capital account, £2,927 expenditure in purchase of ex-enemy shares, and £371 for Government taxes, we were able, after debiting the loss of £35,892 shown above, to carry to our balance sheet for the year 1922 an amount unappropriated of £122,177, which cannot be called an unsatisfactory result when the difficulties experienced in the past year are taken into account.

Recent Results.

I will now deal with the results of operations for the first four months of the current financial year. The tonnage milled of 218,380 tons, representing an average of 54,590 tons per month, shows an improvement. The recovery at 5·041 dwts. remains at about normal. Costs at an average for the period of 21s. 1d. per ton milled are lower than for the preceding six months, and the profit earned was £3,971. The profit for April at £2,000 was a little better than for the previous three months, and is accounted for by a slight reduction in working costs and a small increase in grade. The price obtained for our gold has fallen since the end of last year, and with the existing heavy realisation charges, we are not able to calculate our revenue on a price of gold much above par value. With our costs of production at practically 84s. per fine ounce, it is not easy to see any prospects of making substantial profits, except by a further reduction in costs or an increase in our grade, both conditions, while much to be desired, being difficult to bring about.

That costs have been reduced to a low level is, I think, apparent, but this will be further appreciated when I tell you that, excluding development expenditure, our working costs for April of this year were only 0.3d. above the average for the year 1916, which was our record year for low costs since the amalgamation.

That a material increase in our grade is not possible under present circumstances is explained by our consulting engineer in his report. Although our ore reserves are valued at 5·9 dwts., it is not possible to keep both mills fully operating on tonnage from payable reserves, and as over 50 per cent. of the ore is obtained from lower grade reclamation and other sources, the reason for the comparatively low yield is obvious.

With the exception of the undeveloped area in our south-western section, already referred to, there is no portion of our mine which offers opportunities for further development of any magnitude, and there is little likelihood of any increase being made in our ore reserve tonnage or in its value.

The Crushing Policy.

Our eastern reduction plant obtains the bulk of its ore from the eastern section of the mine, through No. 2 shaft, but it is becoming more difficult every month to maintain the tonnage from this section. To make up for the loss of tonnage from the eastern section, steps are being taken to increase the tonnage from the western section, and every effort will be made to keep both our reduction plants running for just so long as it is possible to keep them supplied with a grade of ore that, on the average, is payable. Should it become necessary later to shut down one plant on account of shortage of payable ore, then the whole position of the mine will have to be carefully considered as to whether it would be possible to make profits on a reduced tonnage scale.

It must be remembered that there are approximately one million tons of a value of 4.4 dwts. per ton standing developed in the mine, which on present costs cannot be worked at a profit. This represents a possible distribution of at least £800,000 in wages and materials were it possible to reduce our existing costs by between 3s. and 4s. per ton milled.

A Question of Costs.

Our monthly expenditure is between £55,000 and £60,000, of which between £12,000 and £13,000 is spent on white wages and salaries. This means an expenditure of at least £150,000 per annum for our white employees, which would cease immediately the mine ceased working. It will be to our white employees' interest to assist us when the time comes for us to decide whether we can or cannot work our lower grade ore. I have, I hope, in this short review dealt with the principal points of interest to shareholders. It is impossible for me, or anyone, to forecast how long we can continue working. As I have said before, it is almost entirely a question of costs; on account of the fact that our remaining reserves of ore can be fairly accurately calculated both as to quantity and value.

You will have seen from the directors' report now before you that the company last year purchased 18,511 ex-enemy shares, which were under the control of the Custodian of Enemy Property of the Union of South Africa. These shares, together with 574 similar shares purchased since that date, have been transferred into the names of two of your directors in trust for the company, and a deed of trust and irrevocable power of attorney have been duly executed, fully protecting the company.

I wish to express our thanks to our consulting engineer, Mr. Whitehouse, to our manager, Mr. Adler, and to our staff for valuable work done in the interests of our company.

I now beg to move that the directors' report, balance sheet and accounts for the year ended 31st December, 1922, laid before the meeting, be received and adopted.

The report and accounts were adopted.

ANSWERS TO CORRESPONDENTS.

"C. A. H."—We do not care to advise you, but consider that the present price of the shares may be somewhat higher than is justified.

"Grateful."—There has been some delay, but we understand that the plant will start up in the very near future.

"J. O."—New Modders.

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The Electrification of the Natal Railways.

LATEST PARTICULARS OF PROGRESS AND OF THE CONTRACTS PLACED.

The most important main line electrification hitherto undertaken in the British Empire is that of the section of the South African Railways in Natal, between Pietermaritzburg and Glencoe Junction. This section is 170 miles in length, and passes through some of the most difficult country in South Africa. The most important parts of the work are now well in hand under the supervision of the Consulting Engineers, Messrs. Merz & McLellan, of Westminster, England.

Power Station.

The site selected for the Power Station is on the right bank of the Tugela River at Colenso. Excavation was commenced in September, 1922, and the foundations were ready for the building steelwork in March, 1923, during which month steelwork erection was started. The Station is served by a siding branching from the main line to the south of Colenso Station, and fanning out on the site to provide standage accommodation for coal trains and empty wagons. Empty trains are taken away by the loop which joins the main line to the north of the Station. A vertical capstan is provided for handling ash wagons and for general use when a locomotive is not in service. Spurs from the sidings serve each side of the engine room and also the Step-up Sub-station and Traction Sub-station, which are located to the north and west of the Power Station.

The Power Station is arranged with the boiler house at right angles to the engine room, and with transformer chambers and a pump house on the opposite side of the engine room from the boiler house. The switch house forms an extension of the engine room on the north-west side.

The station is set sufficiently far back from the river bank to enable the deep excavation for the pump house to be made in the dry. The earth between the pump house wall and the river will be removed after the suction pipes have been put into position and the screens have been erected.

Power Station Buildings.

The engine room is a steel-framed structure 238 feet long and 97 feet wide. The boiler house is 148 feet long by 126 feet wide, with room for extension at the end. The steelwork is being supplied by Messrs. Dorman, Long & Co., Ltd., Middlesborough, who have already commenced shipments from England. Erection is being carried out by Messrs. Wade & Dorman, Ltd., of Durban.

Boiler House Equipment.

The boiler house contains eight boilers arranged back-to-back, with provision for the application in the future of a system of coal treatment. A steel plate overhead bunker, capable of holding 500 tons of coal, is arranged above each row of boilers. The water tube boilers are being made by Messrs. Babcock & Wilcox, Ltd.; each unit consists of boiler, superheater and air heater, and is capable of producing 60,000 lbs. of steam per hour at a pressure of 270 lbs. per square inch above atmosphere, superheated to 700 degrees F. The stokers are of the travelling grate type, operated from two line shafts running the full length of the boiler house, and driven by two squirrel cage motors through worm reduction gearing. The coal chutes are of the travelling type, arranged so that no trimming in the stoker hopper is necessary. The ash hoppers are of 100 cubic feet capacity, lined with fire tiles and discharging into the ash handling plant. The mechanical draught system consists of "Sirocco" fans, direct coupled to squirrel cage motors, a separate fan combination consisting of one forced and one induced draught fan driven by one motor being provided for each boiler unit. The boilers are fed by four turbine pumps exhausting into feed heaters.

Engine Room Equipment.

The five turbo-alternator sets, supplied by Messrs. C. A. Parsons & Co., Ltd., will each give continuously an output of 12,000 K.W. at 6,000 volts 3 phase, and an output of 20,000 K.W. for two minutes. The condensers are of the twin type, each condenser consisting of two condenser shells connected together in parallel. They are located sufficiently near low water level to secure the advantages of syphonic action. The air and water extraction plant consists of air ejectors and vertical pumps with motors mounted above flood level. The five circulating water pumps are of the vertical centrifugal type, driven through flexible couplings and vertical shafts by motors situated in the pump house basement. A 60 ton crane is provided in the engine room.

The circulating water pumps will draw their water from a pit in front of the pump house, to which the river water has access through moving screens supplied by Messrs. Babcock & Wilcox, Limited. These screens automatically clear themselves of leaves and debris contained in the river water. From the pumps the circulating water passes into a header which runs the length of the engine room, and consists of a 54 inch mild steel pipe tapering towards the ends to 42 inch. From this header 36 inch pipes lead to the condensers. The water from the condensers passes to a 54 inch pipe situated immediately above the inlet header and running the full length of the engine room. This pipe discharges through a culvert and diffuser into a sump situated alongside the dam on the down stream side of the station. At the other end of the engine room the pipe delivers into a conduit, which will discharge into the river near Colenso railway bridge. Under normal conditions of river flow, the circulating water will be discharged into the sump and will pass away down stream over the dam. When the flow of the river is less than the quantity passing through the condensers, the water will be discharged on the up-stream side of the station, so that it traverses practically the full length of the pond before it reaches the intake again. The condensing water pipes are being supplied by Messrs. Ashmore, Benson, Pease & Co., Ltd., and Messrs. Blakeborough & Co., Ltd.

The transformer chambers are arranged to accommodate the static transformer sets, one allocated to each generator unit. The normal output of each of these unit transformers is 500 K.V.A., the ratio of transformation being 6,600 to 415 volts. There are also four station transformers, the capacity of each being 900 K.V.A., and the ratio 6,600 to 415 volts. These transformers are being supplied by the Metropolitan Vickers Electrical Co., Ltd. Spurs from the sidings permit the transformers to be moved into position direct from the trucks.

Switch House.

The switch house forms an extension of the engine house, and will be a two-storey brick building, 136 feet long. The Power Station switchgear is being supplied by Messrs. A. Reyrolle & Co., Ltd. Their order includes 6,600 volt switchgear for controlling the generators and supplying Colenso traction sub-station and the main step-up transformer sub-station; 415 volt gear controlling the supply from the station and unit transformers, and the feeders to the auxiliary apparatus; 110 volt direct current switchgear for controlling the battery motor generator, lighting supplies and the battery.

Coal and Ash-Handling Plant.

Coal will be brought to the site in bottom-discharge wagons, which will deliver their loads into two filler pits. From each pit an inclined belt conveyor takes the coal to the top of the boiler house, where it is discharged on a horizontal conveyor running above one of the overhead bunkers. A telpher with a 1 ton [illegible] is provided to transfer coal from one bunker to the other when desired. The ash-handling plant is of the wet conveyor type, the ashes being dropped from the ash hoppers into a trough filled with water, along which they are conveyed to an elevated ash receiver, whence they can be discharged into rail-way wagons.

The coal and ash-handling plant is being supplied by Messrs. Robert Dempster & Sons, Ltd., of Elland, Yorkshire. An electric capstan is being provided by Messrs. Cowans, Sheldon & Co., for moving wagons on the sidings when a locomotive is not available.

Step-up Sub-Station.

Five step-up transformers will be located in an outdoor static sub-station alongside the Power Station. These transformers raise the voltage from 6,600 to 88,000, at which pressure the transmission lines are fed. The transformers and the 88,000 volt switchgear controlling them are being supplied by the International General Electric Company.

A settling pond will be provided alongside the Power Station into which water from the Tugela River will be pumped for treatment before use for boiler feed, boiler washing, etc. This pond will also supply water to the living quarters which the Administration are erecting for the staff to be employed at the Power Station.

Traction Sub-Stations.

Twelve sub-stations are being erected along the electrified route. Four of these will contain one motor generator set, seven will contain two motor generator sets, and one will have three sets.

A sub-station consists of two parts: the brick building housing the motor generator and its controlling apparatus, with the 6,600 volt and direct current switchgear, and an outdoor sub-station for the step-down transformers and 88,000 volt switchgear. A siding which passes through the building permits the plant to be lifted from the railway trucks by a 20 ton crane and placed either in position in the building or so that it can be run out through doors into the open-air sub-station.

The International General Electric Company are supplying the step-down transformers, switches and lightning arrestors. The British Thomas-Houston Company are supplying the motor generators, the automatic equipment for the sub-station, the 6,600 volt switchgear and the operating and indicating panels for the 88,000 volt gear. Two transmission lines are brought into each sub-station, and two sets of disconnecting switches are arranged so that the sub-station may be fed from either transmission line at will.

Each motor generator set comprises an alternating current motor of the synchronous type, direct coupled in two direct current 1,500 volt generators, together with a direct coupled exciter for the motor and a direct coupled exciter for the direct current generator. The generators are coupled electrically in series and supply direct current to the overhead lines on the track at a pressure of 3,000 volts. The total weight of the motor generator set is 60 tons. The field windings on each direct current generator consist of a separately excited shunt field, a series field differential when generating and a series field cumulative when generating. When the motor generator is regenerating, the latter field is diverted or short-circuited. The exciter for the direct current generators is compound wound and self excited. This machine also excites the shunt field of the exciter for the synchronous motor. The motor generators are automatically controlled by an equipment which disconnects them from the track conductors under short circuit or excessive overload conditions, and reconnects them at low voltage. If the overload persists after the motor generator has been reconnected several times in succession, the machine will then be shut down and will not restart automatically until a relay has been manually reset. Alternating current for the various relays and operating devices is obtained from a small transformer supplied from the 6,600 volt side of the step-down transformer. When the remote control switch is closed, the contractors close in sequence and permit a motor-driven controller to start rotating. This controller as it rotates completes appropriate circuits for the different operations, including certain circuits operated by direct current from a battery. Devices are included for protecting the set against overload, hot bearings, earth leakage, loss of excitation of direct current generators, overspeed and wrong polarity. The sub-station at Colenso is fed direct from the Power Station at 6,600 volts, and therefore contains no 88,000 volt gear. Otherwise it is similar to the rest of the sub-stations.

Transmission Lines.

Two 88,000 volt transmission lines will run from the step-up sub-station at Colenso to supply the step-down sub-station along the route. The length of the transmission lines is about 130 miles each. These will be located about half a mile from each other, the distance between depending upon the routes which are found most suitable, both from the point of view of erection and of non-interference with telegraph and telephone lines.

Each transmission line will carry a single circuit, the three wires being arranged horizontally, with provision for transposition of the conductors at suitable intervals. Two earth conductors, consisting of galvanised steel wires, will be carried on the towers, arranged in a horizontal plane above the plane of the line conductors. The insulators will be of the suspension type. The towers will be steel structures spaced from 550 to 800 feet apart, and will be of sufficient height to permit of the conductors being erected with a clearance above ground of 20 feet. As the lines pass through districts where snow-storms occur, provision has been made for ice loading as well as wind loading.

Messrs. Hubert Davies & Company, Ltd., of London and South Africa, have secured the contract for the transmission lines.

Track Equipment.

The route mileage to be equipped comprises 168 miles of single track, 14 miles of double track, and 48 miles of sidings, the total single track equivalent being about 245 miles. The overhead equipment of the track consists of a copper catenary cable, supporting a solid grooved copper contact wire, by means of droppers. The normal height of contact wires above rail level is 16 feet 6 inches, but as the minimum height of overtrack bridges and tunnels is 14 feet 2 inches, it is necessary to bring the contact wire down to a height of 13 feet 10 inches above rail level. The maximum height allowed for is 20 feet above rail level where the contact wire crosses roads. The contact wire will be staggered on each side of the centre of the track. The track structures supporting the overhead equipment consist of lattice steel poles, fixed on concrete foundations by holding-down bolts. Masts for tangent track are built up of two 5½ inch channels with internal bracing, and a cantilever arm of 4½ inch angles. Strain masts are constructed with corner angles, braced. Bridge and cantilever structures are built up of channels and angles. The track structures will be connected throughout by an earth wire. In addition to the catenary and contact wires, two copper feeders will be carried on the track structures; they are connected to the contact wire through air break switches. Provision is made for lightning arrestors of the horn pattern. The overhead equipment of the track is being supplied by the British Insulated and Helsby Cables, Ltd., who are having the track structure built up in South Africa by Messrs. Gilbert Hamer & Co., Ltd., of South African materials. The running rails will serve as a return track, the joints being bonded with two copper bonds.

Locomotives.

Seventy-eight locomotives have been ordered from the Metropolitan-Vickers Electrical Company, Limited. They are of the double bogie articulated type, driven by four motors carried on the bogies. The one hour rating of the traction motor is 300 h.p. The locomotive is capable of exerting 1,200 h.p., which corresponds to a tractive effort of

23,200 lbs. at the one hour rating, and a tractive effort of 16,400 lbs. continuously. The control system is electro-pneumatic, and is arranged so that the locomotives can return current to the overhead line when running on down gradients. The leading dimensions of the locomotives are as follow:—

Weight in working order, about 65 long tons.
Weight of mechanical portions, about 37½ long tons.
Weight of electrical portions, about 27½ long tons.
Type of locomotive, 0-4—4-0.
Gauge, 3ft. 6in.
Motor equipment, four 300 h.p. motors.
Total motor rating, one hour 1,200 h.p.
Tractive effort, one hour 23,200 lbs., continuous 16,400 lbs.
Speed, one hour 20.75 m.p.h., continuous 22.5 m.p.h.
Control equipment, electro-pneumatic.
Traction system, 3,000 volt D.C.
Current collectors, pantograph trolley.
Brakes, dual fitted; air pressure for loco.; vacuum for trains.
Length of body, 40 feet 8 inches.
Overall height of locomotive, 13 feet.
Overall width of locomotive, 9 feet 2¼ inches.
Diameter of driving wheel, 4 feet.
Wheel base of bogie, 9 feet 3 inches.
Weight per driving axle, 16¼ tons.
Maximum safe locomotive speed, 45 miles per hour.

From the "South African Railways and Harbours Magazine."

MOVEMENTS OF BEES RECORDED BY ELECTRICITY.

An ingenious electrical device now records the movements of bees as they enter and leave the hive. It is an electrically operated gate at the entrance to the hive, having a series of telephone message registers. This time-clock for the bees will enable a check to be made on previous estimates that 300,000 trips a day are performed by bees of the average hive in gathering the daily store of honey.

NEW YORK HAS POTENTIAL WATER POWER RESOURCES OF 4 MILLION HORSE-POWER.

Fresh attention has been directed toward the hydro-electric possibilities of Niagara Falls by the recent statement of Dr Charles P. Steinmetz, Chief Consulting Engineer of the General Electric Company of Schenectady, New York, that New York State has potential water power resources of four million horse-power. Much of this, Dr. Steinmetz declared, is to be found in streams and is made up of many small sites. Niagara alone, it is estimated, has a total possible volume of six million horse-power, were it used entirely for energy development.

AN OUTSTANDING FEATURE

Of the Mining Industry is the rapidly increasing success of 'RAND' CARBIDE for Underground Lighting. This latest product of South African enterprise is fast winning its way to the highest point of popularity by virtue of its unequalled quality. It is already used almost exclusively by the Mines of the Witwatersrand, and, apart from this, is giving satisfactory service all over the Union, in every branch of Acetylene Lighting and Welding.

Insist on "RAND" Carbide.
Awarded Gold Medal at the Rand Show, 1923.
Obtainable in all sizes and packings from Dealers, or direct from Factory, Germiston.
RAND CARBIDE, Ltd. (P.O. Box 127 'Phone 252) Germiston, Tvl.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

May 21.—Meyer and Charlton (a), 11 a.m.
New Goch Gold Mines (a), 12 noon.
Roodepoort United Main Reef (a), 3 p.m.
West Rand Consolidated (a), 4 p.m.
May 22.—Cinderella Consolidated (a), 11 a.m.
Aurora West (a), 12 noon.
Rand Collieries (a), 3 p.m.
New Steyn Estate (a), 3.30 p.m.
Sacke Estates (a), 4 p.m.
May 22.—City Deep (a), 11 a.m.
Robinson G.M. (a), 12 noon.
May 25.—Crown Mines (a), 10.30 a.m.
Durban Roodepoort Deep (a), 12 noon.
Rand Mines (a), 2.30 p.m.
May 25—New Kleinfontein Co., Ltd. (a), 11 a.m.
May 25—Apex Mines, Ltd. (a), 10.30 a.m.
May 28.—Consolidated Langlaagte Mines, Ltd. (a), 11.30 a.m.
Langlaagte Estate and Gold Mining Co., Ltd. (s), 12.15 p.m.
May 28.—Consolidated Langlaagte Mines, Ltd. (s), 11.15 a.m.
Langlaagte Estate and G.M. Co., Ltd. (a), 12 noon.
Randfontein Central G.M. Co., Ltd. (a), 3 p.m.
Randfontein Estates G.M. Co. (Wit.), Ltd. (a), 3.30 p.m.
May 29.—New Primrose G.M. Co., Ltd. (a), 11.30 a.m.
New Unified Main Reef G.M. Co., Ltd. (a), 11.45 a.m.
Witwatersrand G.M. Co., Ltd. (a), 12 noon.
New State Areas, Ltd. (a), 2.40 p.m.
Van Ryn Deep, Ltd. (a), 3 p.m.
Government G.M. Areas (M.) Cons., Ltd. (a), 3.45 p.m.
May 29.—Monteleo Diamonds, Ltd. (a), 4.15 p.m.
May 30.—Knight Central, Ltd. (s), 11 a.m.
May 30—Witwatersrand Deep, Ltd. (a), 2.30 p.m.
June 5.—Brakpan Mines, Ltd. (s).
Leeuwpoort (African Farms) Tin Mines, Ltd. (a), 10 a.m.
June 5.—Welgedacht Exploration Co., Ltd. (a), 11 a.m.
June 6.—S.A. Townships Mining and Finance Corporation Ltd. (a), 10.30 a.m.
June 8.—West Springs (a), 11 a.m.
Daggafontein Mines (a), 11.30 a.m.
Springs Mines (a), 12 noon.
Brakpan Mines (a), 2.30 p.m.
Rand Selection Corporation (a), 3.15 p.m.
New Era Consolidated (a), 3.45 p.m.
June 9.—Transvaal Coal Corporation (a), 10.30 a.m.
Anglo American Corporation (a), 11 a.m.
June 29.—Durban Roodepoort Deep, Ltd. (s), 10 a.m.
July 19.—Transvaal Consolidated Lands (s), 12 noon.
August 10.—Transvaal Consolidated Lands (s), 12 noon.
Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

WHOLE VILLAGES MOVED BY ELECTRICITY.

They not only move houses in the States by electricity but whole towns. A small village of ten houses, two churches, a jail, a skating rink, [illegible] and a commissary was moved to a new location by means of a steel frame fitted with wheels and drawn by an electric truck. Of course, the different structures were moved one at a time, even though the energy employed was the most powerful of all the forces harnessed by man.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET. WAITING ON EUROPEAN DEVELOPMENTS—IRON & STEEL—LOCAL AND WORLD CONDITIONS—BRITISH OVERSEAS TRADE IN MARCH—MERCHANTS' VIEWS ON POSITION, PRESENT AND FUTURE—RECENT MUNICIPAL TENDERS ADOPTED AND RECOMMENDED—LATEST METAL QUOTATIONS.

General.

Some merchants this week report increased inquiries and slightly better business but, on the whole, the majority state that things still remain exceedingly quiet, with no rift in the clouds of depression. The only gleam of hope at present is in the Agricultural section, where a good wool return seems to be assured, which, in conjunction with the maize crop, appears to foreshadow a good time for the farmers in a few months' time, and eventually, it is hoped, for the commercial community on the Rand. The money realised by the farming community in both wool and maize is bound to circulate throughout the Union, and is, as a matter of fact, being looked forward to here by merchants to compensate in some measure for the stagnation existing in other lines.

The European position still remains in a very unsettled state, aggravated by the Greco-Turkish squabble, and the outlook to-day is the reverse of cheerful. Nobody at the moment knows how the present difficulties are going to be surmounted, and the peace which we have all been looking forward to since 1918 seems farther off than ever. In the opinion of a leading commercial man seen this week, things are at the moment undoubtedly very serious, but he thought that the British Government would eventually create order out of the present chaos, and that some satisfactory settlement would at last be arrived at between Germany and the Allies in respect of the vexed reparations question. What the whole world is wanting mostly is peace, and it should not be beyond the wit of the powers that be to arrive at such a consummation. At any rate, he firmly believed that in time (perhaps very shortly) some satisfactory arrangement would be come to between the opposing factions, which would ensure a period being put to the existing absurd conditions and give the world a chance to consolidate conditions and build up a more stable structure.

In the opinion of this very shrewd commercial man, the recent rumours of a change in the present Government were of a very chimerical nature, and he thought that the Smuts regime would reign until the end of its term, as it was gaining strength every day and enjoyed the confidence of the majority of the constituents of the Union.

Engineering shops are at the moment fairly busy, with, however, no overwhelming amount of business on hand; they appear to be having sufficient work to keep them running comfortably.

The recent reports of the mines, especially of the East Rand Proprietary Mines, Ltd., show how precarious has been the recent fall in the price of gold, and in the case of the latter concern the present condition is a matter of grave concern. When gold eventually reaches parity some of our low grade propositions will have to face a greater struggle for existence, unless in the meantime working costs are considerably reduced, of which, in face of the conditions ruling overseas and increased costs of mining materials consequent thereon, there are at the moment no signs. Unfortunately not all our mines are of the Modder description.

It is interesting to learn that the estimated deficit of the Transvaal Province as at March 31, 1924, is likely to be about £600,000.

Iron & Steel.

Merchants called upon this week report a little more activity on the Commercial Exchange for all classes of goods; prices have, up to now, shown no indication of firming up in sympathy with increased quotations ruling overseas, and remain practically stationary.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s., cheques plates, 27s. 100; lb.; imported flats, ½ x 3-16, ½ x ¼, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. lb.; phosphor tin, 2s. 9d. lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 18 in., 60s. and upwards; barbed wire, "Shortthorn," 69 lb., 13½ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s.

per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

World Conditions—Britain.

The Outlook.—The principal features of the market in the past week have been the absence of new business and the increase in the quantity of steel material offered from the Continent. The belief that lower prices are likely to rule shortly is partly based upon the refusal of buyers to enter upon business at current rates, and to a weakness which seems to be developing in Continental prices. In spite of the severely curtailed production in France and Belgium there appears to be a surplus for export, probably owing to the closing of the German market to the French and Belgian works. In these circumstances the natural tendency is for manufacturers in France and Belgium to seek business in the British market. On the London Iron and Steel Exchange business has been quiet.

Pig Iron.

With more fuel available the production of pig iron in Britain appears to be on the increase, but there has been no alteration in prices. There have been a few buyers of basic on the market at £6 delivered works. There has been a moderate demand for foundry iron, and good quality No. 3 has been sold at £6 7s. 6d. to £6 10s. at furnaces.

Semi-Finished Material.

About 600 to 800 tons of French wire rods were sold during the week at £12 f.o.b. British works are quoting £9 15s. to £10 for billets and £14 to £14 10s. for wire rods.

Finished Materials.

Belgian bars have been offered at £9 5s. to £9 15s. with few transactions.

Tinplates.

Works continue to quote 25s. 6d. for 20 by 14 basis f.o.b.

Galvanised Sheets.

This market is firm at £19 10s. to £19 15s. f.o.b. for 24 gauge corrugated sheets in bundles.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots; fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 21s. per cwt.; cut steel nails, 3in. to 6in. clasp, in 2 ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 24s. per cwt.; flat steel sheets, 26s. per cwt.; black, 21s. per cwt. Bolts and nuts, 50 per cent. discount.

Quotations.

Pig Iron.—Cleveland, Foundry No. 1, 130s.; No. 3, 127s. 6d.; No. 4 forge, 120s.; mottled, 120s.; hematite, mixed Nos., 125s. Finished iron and steel. Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £10; hard, £10 15s.; bars and angles, £10; tees, £11; joists and channels, £10 5s.; sheets, singles, £14 10s.; doubles, £15; lattens, £15 15s.; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

Trade with Occupied Germany.

A trader residing in the occupied area gives his view of the present situation in the Rhineland and of the future in an article which appeared in "The Ironmonger" in mail week, the following excerpts from which may prove of interest. The French Government, he says, has had its way, and its policy so far has been an admitted failure. It may or may not succeed in the future; but—since a good many Englishmen seem to think that a difficult problem might have been solved by the adoption of the British proposals—I think it well to record my opinion, based on repeated conversations with the Germans themselves, that under no circumstances would any scheme have worked which relied for its success—as the British scheme did—upon German goodwill. Germany would have taken the same line at the end of the four years' moratorium as she is taking now, with the difference that she would then have been in a far better position to resist. British manufacturers and exporters may dismiss from their minds any idea that the adoption of the British scheme would have enabled them to sell their goods to advantage in Germany. Exchange manipulation or restrictive import legislation would speedily have dissolved the illusion. Recent measures taken by the German Government, and the specious plea that it was being [illegible] by the German people, are sufficient proof of this. And, heavily as British traders have suffered through the action of the French, their sympathies go out a great deal more to the French than to the Germans now. A great deal of misconception still appears to exist with regard to the Inter-Allied Rhineland High Commission. On this Britain is in the minority and as such must inevitably go to the wall. In regard to contracts made before the trouble started, it seems clear that a plea of "force majeure" for non-performance would inevitably be successful, and firms in England would be very ill-advised to attempt legal proceedings against exporters or importers here for not carrying out their contracts. What the future will bring, no one can say, but it is possible to forecast that sooner or later Germany must capitulate. If there is one certain factor in the situation, it is that Germany does not intend to pay reparations, never has intended to pay, and will not do so unless she is forced. One thing must not be forgotten, that Germany, her finances and her policy, are completely at the mercy of a small group of unscrupulous capitalists who have vast wealth at their disposal outside her boundaries.

Cumberland Miners' Wages.

The new monthly ascertainment of the price of Cumberland hematite pig iron, mixed numbers, is £5 1s. 6.58d. as against the previous month's price of £4 16s. 6d. Cumberland iron ore miners' wages in consequence are increased by from 2½d. to 5d. per day, the boys getting an increase of 1¼d. The scale for the ensuing month per day is as follows: Miners working bargains, 10s. 2d., minimum 7s. 6d.; leading labourers, 6s. 5½d.; winding engine men, 8s. 10½d.; joiners, 9s. 2½d.; mineral shot borers, 9s. 2½d., plus 3d. per foot; blacksmiths, 9s. 2½d.

Wholcsale Prices.

The general level of wholesale prices in March as registered by the Board of Trade Index Number was 160·5, which is 1·7 per cent. above the corresponding average in February, and 0·2 per cent. above the level of a year ago. The price movement between February and March shows a fall of 1·7 per cent. in food and an advance of 3·6 per cent. in industrial materials. The averages for "iron and steel" and "other metals and minerals" show increases of 8·5 per cent. and 7·2 per cent. respectively.

Cleveland Ironstone Miners.

At a conference between the Cleveland ironstone mine owners and miners' representatives at Middlesbrough, presided over by Sir Hugh Bell, on April 9, it was decided to increase the district percentage wages from 84 to 88½ for the next three months, a general advance of 4½ per cent. The eight hours shift became operative again as from April 16, coupled with an advance in the base rates of lower-paid able-bodied adult men.

Shipbuilding Increasing.

For the first time since March, 1921, the British quarterly shipbuilding returns show an improvement. The tonnage being built at the end of March was 1,492,138 tons, and exceeded by about 23,000 tons the figures given for December 31 last. The tonnage under construction in all other countries is over 100,000 tons less than that in Great Britain.

Trade and the Ruhr Occupation.

The whole blame for the interruption of the trade between this country and occupied Germany are being thrown by the President of the Board of Trade upon the German Government. On April 16, Sir Philip Lloyd Greame said he attributed the [illegible] of British trade with the occupied area in the fact that although the French Government was [illegible] charging at the frontier the same duties as were previously charged and the licences were the same, the German Government had forbidden its nationals to trade under these regulations. The British Government had intimated to the German Government that it [illegible] the attitude which the latter had taken up, and had recently again urged the German authorities to withdraw their opposition to the French régime. The German Government, it said, was making trade impossible.

Furnaces Restarted.

On April 9 [illegible] furnaces were blown in at the Ebbw Vale Works at [illegible]. One of these was started during last year, but [illegible] had not yet been relit. There are now three furnaces blown in at Ebbw Vale, so that there is every prospect of an early resumption of work at the steelworks, which have been idle since the end of August last, following a stoppage at the collieries. The lighting of the No. 3 blast furnace at John Lysaghts (Ltd.) Steel Works on April 10 brings the number of furnaces in blast at the Normanby Park Works up to four. This is the first time that four furnaces have been in operation at any one individual plant on the Lincolnshire ironstone ore. Lysaghts are now working at full capacity, and are turning out considerably more iron and steel than ever before in the history of the firm.

The Unemployment Barometer.

The number of persons recorded on the live register of the Employment Exchanges in Britain as wholly unemployed on March 26 was 1,243,400. This was 242,478 fewer than were recorded on January 1. Returns for the week ended April 3, however, show an increase in unemployment, 41,470 more persons being on the register than on March 26. This is the first increase in numbers shown in any week this year. The steady improvement throughout the country, which the statistics published week by week have shown, have been reflected in the returns of all the great industrial areas. In Birmingham to-day the unemployed number only 48,000, as against 70,000 a year ago; in Sheffield the number has dropped from 43,000 to a little over 30,000; in Manchester it has dropped from 57,000 to 35,000.

Buying and Selling.

In an address on "Buying and Selling," before the Birmingham Rotary Club, Mr. N. P. Veitch, who represents [illegible], Ltd., in the Birmingham area, drew attention to the difficulties which beset buyers of raw materials, especially iron and steel, owing to national and international political disturbances. Industry in the main had still to be rebuilt. The difficulties sellers had to contend against were accentuated by the fact that many of their customers had no knowledge of the art of buying. Their one idea was to buy cheaply. In that respect buyers for large corporations were usually the worst offenders. On the other hand, where the control of a business was in individual hands, materials were generally bought on their merits, the question of price being only one factor in the transaction.

United States: A Steel Boom.

The United States Corporation proposed to give an increase of 11 per cent. in pay to labourers from April 16. It announces that 99 per cent. of the capacity of production is employed, and that the remaining 1 per cent. would be employed if workers were available.

Production and Consumption of Tin.

In 1921 the United States consumed one-third of the [illegible] tons of tin produced in the world, of which only 4 tons were obtained from domestic deposits. The American Department of the Interior calls attention to the dependence of the United States upon foreign supplies, and points out that 44 per cent. of the world's output was produced in the British Empire.

Market Conditions.

Should the demand for iron and steel continue, it is likely that the latest wage advance will be followed by an increase in prices.

The Steel Output.

The output of steel during March increased 182,990 tons to 3,402,000 tons, and according to the American Steel Institute's returns is equivalent to an output of 3,888,000 tons for the entire industry for the month.

The United Steel Corporation's unfulfilled orders at the end of March totalled 7,403,332 tons, which is the largest since January, 1921.

Canada.

The steel trade is making steady advances towards normal production, and during the past few weeks the leading companies have materially increased the volume of their operations. Several additional blast furnaces have recently been started, and the moderate increase in the pig iron and steel output returned for the month of January will be considerably surpassed by the February and March figures. The British Empire Steel Corporation reports a number of contracts have been made for pig iron, steel and railway cars. The Imperial Steel Corporation of Collingwood, Ontario, has booked orders for about $100,000 worth of wire products for Australasia. The company is installing equipment for the manufacture of galvanised wire, which has not previously been produced in Canada.

The Production of Metals.

The total output of metals in Canada in 1922 showed an improvement on the previous year, but there was a decrease of 28.5 per cent. in the production of nickel compared with 1921, the total for last year being 7,811 tons. The output of lead in 1922 was 42,000 tons, an increase of 11 per cent. A reduction of 9 per cent. on the year took place in the production of copper, the total for the year being 19,300 tons. 2,400 tons of iron ore was sold for export last year, and 16,400 tons of pig iron. The silver output totalled 7,858 ozs.

Germany: English Hematite.

The sale of English hematite has been suspended by the German pig iron syndicate. English hematite and pig iron are still cheaper than the German qualities; hematite, for instance, at 138s. c.i.f., working out at about 690,000 marks as against 770,000 marks for German hematite made with English coal. For pig iron the corresponding price is 140s. c.i.f., or, roughly, 700,000 against 740,000 marks. Iron made with German coal is still very difficult to obtain. Prices have been lowered again, by 32,000, to 61,000 marks. Most iron prices have remained unchanged for the first part of April, but new quotations announced for the second half of the month include slight reductions in pig iron. Hematite and pig iron poor in copper are now quoted at 646,300 marks the ton, as against 678,300 since February 24; foundry 3 at 613,300, as against 645,300; Luxemburg quality, 603,300; Siegerland steel-iron 843,700; spiegel iron, 939,600. The reductions for pig iron made with foreign coke are smaller, foundry 3 being quoted at 737,000, as against 752,000, and hematite at 770,000, as against 785,000. Prices for Siegerland iron ore have been reduced to 151,879 from 162,103, and quotations for roasted ore to 197,500 from 210,934.

Spain.

The Spanish production of iron ore in 1921 was 15.4 per cent. less than in 1920, and totalled 2,602,300 tons, of which 20,000 tons was manganese ore. The production of pig iron in 1921 was 247,500 tons, and of steel 322,500 tons. The imports of iron and steel materials into Spain in that year amounted to 186,300 tons, of which 6,250 tons was tinplate.

British Overseas Trade in March.

Labour difficulties have delayed the full overseas trade returns for March, but the short summary issued by the Board of Trade shows an increase in imports to £90,022,226.

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A Prize of £10

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as against £81,857,164 in February. Although there were more normal working days in March, account has to be taken of course of the dislocation of trade caused by the Easter holidays. Imports of raw materials show an increase of 27 per cent. compared with March, 1922, while food imports show an increase of 17 per cent. Prices have, in the meantime, fallen by at least 10 per cent. A decrease from £64,709,315 to £16,?84,080 in Home exports of wholly or mainly manufactured articles is less satisfactory, as is the loss of over half a million pounds in the value of re-exports of manufactures.

Natal.

Last year the Natal Collieries produced an output of coal of 3,222,981 tons as compared with a yield of 2,329,470 tons in 1918.

Important Merchant's Views on Position.

In a hurried talk with a responsible merchant this week, he said: Things continue very quiet, but there is more activity showing itself in the outside districts—not so much on the Rand here; but the various municipalities are issuing inquiries for lighting schemes, etc., which indicates a tendency towards improvement anyhow. The locusts, he said, had, of course, done a lot of damage, but fortunately they came too late to affect the main crops, and, in his opinion, quite a considerable improvement should take place within the next three months in respect of the agricultural business. He thought conditions locally would become more acute, and unless there was a decided improvement shortly many commercial firms would be obliged to go under—there was no question about it. He did not exactly understand what is indicated by the Government not getting a single tender for the new area put up, but probably one reason was political, and also fear that the Far East is not likely to develop as well as the others. This is a great pity, as the starting of such an undertaking would, of course, circulate a considerable amount of cash in the near future, which was very much needed at the present time.

Electrical Goods.

There is no change to report in this section. Business, owing to the increased building activity, is fairly good and prospects of betterment are better now than they have been for some time. Prices remain about the same.

Timber and Building Materials.

Business in the timber trade has been quite satisfactory during the past week, owing to the number of building contracts which are now in operation. Stocks are fair, with the exception of some sizes of scantlings, but it is expected that within a month or six weeks stocks of all descriptions will be plentiful. Bricks are in good demand, with, however, as yet, no alteration in prices.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3⅞d.; floorings, 6d. to 6½d.; ceilings, 4d. to 4½d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d. to 9d., very firm. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft. 3 ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12in., 6s.; 15in, 7s. 6d.; 18in., 9s.; dry red oxide, 14s. per 100lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing 36s. to 54s. for 1 to 3 ply.

Second-hand Iron and Timber Yards.

Prices of second-hand iron and timber are very firm at about 7d. and 9d. respectively, with a tendency to go higher. There has been an increased demand for second hand stocks during the past month or two, but owing to the scarcity of same prevailing business has been somewhat meagre.

Tenders recently Adopted and Recommended by the Johannesburg Town Council.

Adopted.—Messrs. Hubert Davies & Co, Ltd., for the supply of 14 tram car 28 gear wheels, at £15 15s. 6d. each; Messrs. Vickers (S.A.), Ltd., do., at £12 10s. each, together with necessary pinion wheels subject to cost of latter being reasonable; Messrs. Cammell, Laird & Co., 500 steel tyres at £3 14s. 1d. each, total £1,856 5s; W. Jessop & Sons, 144 wheel centres, 300 journal box springs, £896 19s.; Samuel Osborne (S.A.), Ltd., 350 axle box and motor suspension springs, £44 11s. 8d.; Messrs. Dowson and Dobson, sundry spring rocker seats, brake hangers, spiral drums, etc., £311 5s.; Messrs. Hadfields, 36 forged Era steel axles at £8 10s. 8d. each, £317 14s.; Messrs. Thos. Barlow & Sons (S.A.), Ltd., springs, truck connections, etc £206 1s 10d.; Messrs. Cammell, Land & Co., steel axles and springs, £570 9s.; Messrs. Rice & Diethelm, Ltd., springs and gear cases, £346 2s.; Messrs. Hubert Davies & Co., Ltd., side bar frames and springs, £719 12s.; General Fire Appliances Co., 45 lengths 2½in. canvas fire hose, £450.; Concrete Reinforcement and Fire Hose Co., 25 lengths 2½in. canvas fire hose, £285 12s. 6d.; Tweefontein United Collieries, Ltd., 150 tons of tar at £12 10s. per 2,240 lbs. net weight, £1,875; Messrs. A. Taylor & Co., Ltd., 300 tons of Barber's liquid asphalte, at £19 3s. per 2,240 lbs. net.; Messrs. Flint & Epton, 120 tons of creosote at £27 18s. 6d. per 2,240 lbs., £3,387.

Recommended.—The Telegraph Manufacturing Co., for 5,000 yards electric cable at 5s. 5⅜d. per yard, £1,372 7s. 11d.; Messrs. Allen, Wack & Shepherd, Ltd., 500 27ft. steel lighting poles, £2,532 15s.; Messrs. Allen, Wack & Shepherd, Ltd. 250 steel tram poles, £4,088 5s.; Messrs Blane & Co., Ltd., 2,000 tie bars at 7s. 8d. each, £766 13s. 4d.; Messrs. Hubert Davies & Co., Ltd., 100 27ft. steel lighting poles at £5 each, £500; The Scottish Tube Co. (S.A.), Ltd., 25,500ft. of 3, 4 and 6in. piping at 1s. 10d., 2s. 5½d. and 4s. 1d. per foot, £3,456 5s.; Messrs. S. Sykes & Co., Ltd., spare parts for Kent watermeters, £2,402 7s. 3d.; Messrs. Blane & Co., 20 sets (forty in all) of wheel double motor bogie trucks, £7,880; The South African General Electric Co., Ltd., 20 sets of electrical equipment, £21,200.

London Metal Market Quotations, May 14.

Standard copper, £66 cash, £63 15s. three months; electrolytic copper, £76 seller's option, £77 buyer's option; wire bars, £77; standard tin, £199 5s. cash, £197 15s. three months; foreign lead, £25 2s. 6d. prompt, £24 12s. 6d. forward; quicksilver, £10 7s. 6d.; bar silver, 32¾d.; bar gold, 89s. 2d. per oz.

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Applications are invited for the following positions:

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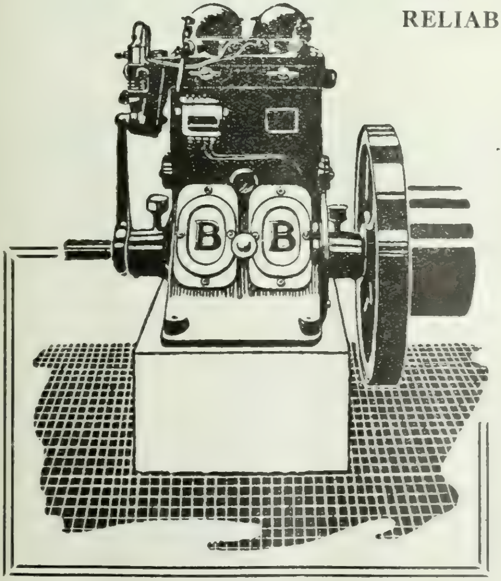

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The Utilitarian Value of Geological Investigation, Illustrated by the Geology of South African Coals-III.

Anniversary Address by the President, C. J. Gray, A.R.S.M., read at the Annual Meeting of the Geological Society of South Africa.

Leaving Ntambanana for Somkele, further to the north-east, we come to another interesting coalfield known as the St. Lucia field near Somkele station, where much boring has been done; we have two principal seams, one about 10 ft. thick and the other 170 ft. vertically below, about 18 ft. thick, dipping south-eastward at an angle of about 30 degrees. Below these seams, 276 ft. distant measured at right angles to the dip of the strata, are shales which I, in the past, have taken for the lower Ecca shales, but behind the outcrop of these shales we find outcrops of several other coal seams. These seams are met with for about eight miles north of Somkele to the Inyalazi pans; they dip southward with a mean dip of 24 degrees. Whether they are geologically lower than the Somkele seams, or whether they are step faulted down—as is more probably—is uncertain. All the seams at Somkele and back to the Inyalazi pans are anthracitic, though some of the coal near the pans is much less anthracitic than that at Somkele. Immediately beyond the Inyalazi pans, though the sandstones and interbedded shales continue, there is a sudden change in dip, probably beyond a fault, the strata suddenly becoming almost horizontal with, if anything, a slight general dip northward. I know only one coal seam in that area, and it is only 1 ft. 2 in. thick, but it is more bituminous and cleaner than the coal nearer Somkele. There may be other seams, but as the strata are horizontal and the area lies between the tilted strata to the southward and older rocks to the northwest and is probably bounded by fault planes, outcrops of lower seams, if there are such seams, would be unlikely. No boring has been done in the area. Probably Du Toit is right in supposing that the thin horizontal seam is Ecca coal, if that indeed is the seam to which he refers, but I hardly think that the tilted seams near the Inyalazi pans differ materially in geological age from the coals at Somkele, which Du Toit, supporting Etheridge, junior, and Seward, places on the lower Beaufort horizon. It will be seen from the foregoing that careful geological investigation of the Somkele area may have economic results, as if the coal north of the Inyalazi pans proved of Ecca age, and different in age from the outcropping anthracitic seams nearer Somkele, there is room for hope that good coal will be found north of the pans. That hope, it will be seen, may be based on grounds other than the theory which I advanced in 1907, that on the Zululand coast the pressure and perhaps the heat accompanying tilting and faulting of the strata probably have affected the seams. Recently coal seams of important thickness have been found between Ntambanana and the Somkele field, in the strip of land between the White and Black Umfolosi rivers, but I have not seen these seams and have no knowledge of value with regard to them.

From what I have said with regard to the coal areas on the Zululand coast, the possible value of careful examination of palaeobotanical remains and of the stratigraphical work in the field will, I think, be made clear.

We pass on to consider another aspect of the subject. If there is any connection between the quality of coal and its geological horizon, stratigraphical work for ascertaining horizons will obviously be of economic value.

Du Toit has suggested that perhaps it is a characteristic of the Beaufort seams to be anthracitic. I have a similar theory that for South African coals the rule usually holds that when there is more than one series of closely associated seams, the geologically lower series, except when locally altered by igneous action, contains the better coal for steaming purposes. The coal is generally cleaner and its fuel ratio is nearer that most desirable.

Taking the Umlalazi field we find that those seams north of the Bhade stream are probably geologically above those to the south, though it is not quite certain. A series of analyses of these northern seams was made in 1898. Much reliance cannot, however, be placed on these analyses as indications of the character of the unweathered coal, as the samples were mostly from the very shallow excavations or outcrops, in which the coal, which appears to weather exceptionally easily, contains much moisture. Indeed I believe, though my information is indefinite, that somewhat later prospecting showed that much of the coal is anthracite. The analyses, leaving out two exceptional samples which contained 13 and 53 per cent. of ash, ranged from 18 to 27 per cent. ash, arithmetical mean, taking no account of the varying thicknesses sampled, 23·4 per cent., with fuel ratios (fixed carbon ÷ volatile hydrocarbon) from 0·7 to 2·6, arithmetical mean 1·4. The seams south of the Bhade have generally been found in boreholes only. They are, as has been said, generally anthracitic, probably owing to proximity to igneous rock, but some are fairly clean for South African coal, the ash running from 10·2 per cent upward. The lowest seam is the most promising on the field, but is very imperfectly proved. I have the analysis of a weathered sample from a shallow outcrop pit only. It shows 19·4 per cent. ash and fuel ratio 2·9.

On the St. Lucia field the coal found in the area north of Inyalazi pans is the best and probably the lowest. A weathered outcrop sample gave 17·0 per cent. ash and fuel ratio 2·7.

On the Komati field, according to the information published, the best coal is in the lowest seam, of which the outcrop coal is reported to contain 15·81 per cent. ash and to have a fuel ratio of 2·9.

The recently discovered Northern Waterberg coals show the same feature of improvement in steaming quality with increase in geological depth. Trèvor and Du Toit, referring to the series of analyses of seams met with in the borehole in Grootgeluk No. 1360, which they give, state "From the analyses of these samples it appears that the lower seams below 300ft. correspond to the ordinary Transvaal and Natal qualities, but that the upper seams are of a different and more bituminous nature than any yet worked in the country." The analyses given for the upper seams range from 21·8 to 32·3, arithmetical mean 26·6, in ash, with fuel ratios 1·3 to 1·5 arithmetical mean 1·4, and for the lower seams from 13·5 to 28·8 arithmetical mean 21·3, in ash, with fuel ratios 2·1 to 3·5, arithmetical mean 2·9.

You will notice the similarity between the Umlalazi and Northern Waterberg coals. Such difference as there is appears to be due to the igneous intrusions at Umlalazi. It may be of interest to point out that Trèvor and Du Toit's remark that "In view of the fact that the coals of the upper horizon, while high in ash, are markedly bituminous, the question is opened up as to the possibility of mining the material in bulk and treating it for by-products alone" is not very different in idea from your late President J. J. Garrard's remark in 1898: "I am inclined to think that at Umlalazi certain of the so-called 'banded seams' might more correctly be classed as highly bituminous shales, and that further investigations should be directed to ascertaining the products of distillation to be obtained from them."

(To be continued.)

HOW THE NEW STATE AREAS EQUIPMENT IS RUNNING—NATAL AS THE ULSTER OF SOUTH AFRICA—THE INSIZWA RANGE—TAXATION RUN MAD—DRILL STEEL AND ITS TREATMENT.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
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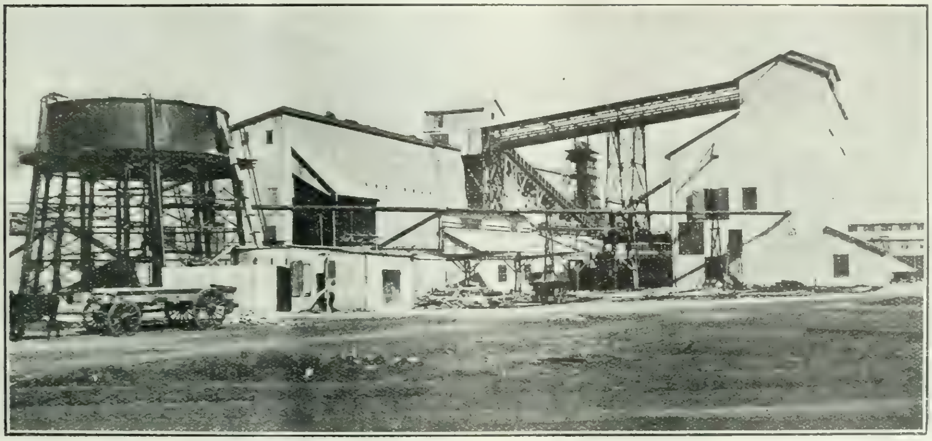
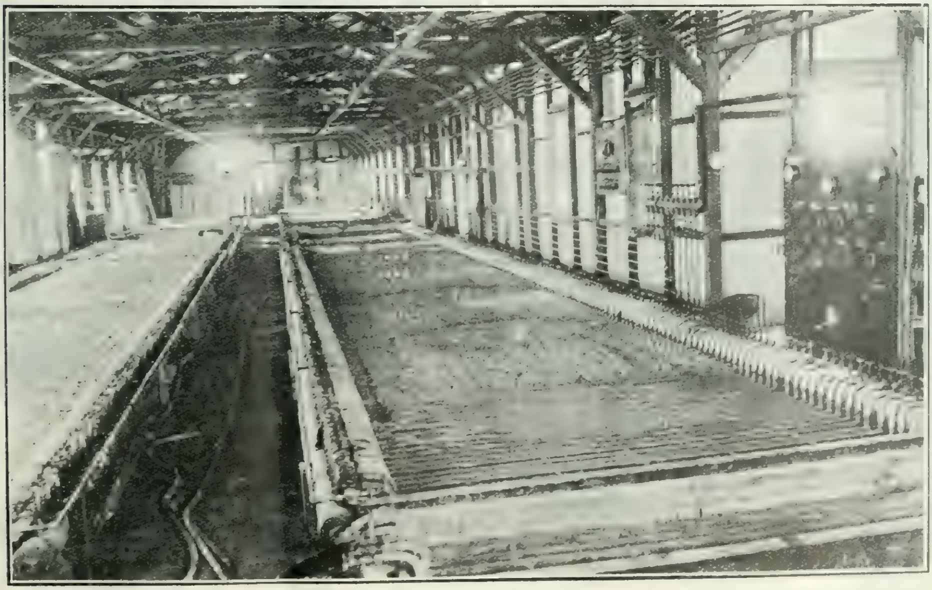
Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, MAY 26, 1923 No. 1652

Geduld's Extended Equipment.



General view, showing new additions to plant.



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New State Areas Equipment.

HOW THE PLANT IS RUNNING—CORRECTING MINOR DEFECTS AND MAKING SMALL ADJUSTMENTS—CAPACITY LIKELY TO EXCEED ESTIMATES.

The crushing and treatment plant of the New State Areas Company is not wholly completed, but the greater portion of it has been in commission since the early part of this month. The equipment is of novel design and it is hardly necessary to say that the results secured by this all-sliming installation with its complete absence of gravity stamps from inception are being awaited with keen interest not only on the Rand, but throughout the gold mining world.

It may be recalled that some little time ago we directed attention to certain criticism of the design of the New State plant which appeared in a leading American technical journal. The writer of that criticism concerned himself, amongst other matters, with the dimensions of the tube mills. In point of fact the employment of these larger size tube mills has now become portion of the latest "standard" practice on the Rand, and it is understood that although it is as yet much too early to speak in any definite terms as to the operating results of the New State equipment, the technical heads of the controlling group are quite satisfied with the tube mill operations both in respect of capacity and general mining efficiency. It is indeed probable that the capacity of the plant originally based on an estimate of 50,000 tons per month will be substantially exceeded in actual practice.

The crushing portion of the plant has not yet, so we learn, come into full commission, but in so far as the Hadfield jaw and disc crushers have been operated to date, the management and consultants are well pleased with results.

Plant Gradually Coming Into Full Commission.

In a plant of this nature embodying several features of radical departure from what has hitherto been regarded as orthodox Rand metallurgy, it will obviously be necessary to feel one's way to some extent. Certain readjustments have been necessary in this as in all other new equipment, and it is because of the novelty of design and also perhaps for other reasons that rumour has been busy during the past few days regarding the preliminary operation of the installation. Some little trouble has been experienced with certain of the concrete cyanide vats. We understand that cracks have appeared in some of these, but inasmuch as ore has not yet been crushed in cyanide solution, as will be done when the plant is running in full commission, there has been no loss of gold incurred in this respect, and the slight deficiencies in the tanks are now being remedied. Naturally it will take some time to establish the cyanide circuit and to get everything tuned up to satisfactory working pitch. No output will be declared from the current month's operations, but there will be a declaration in respect of the recovery for next month.

Management Well Satisfied With Preliminary Results.

Generally speaking, the metallurgical outlook at the property is good, the equipment is fully working up to expectations, its capacity is likely to be materially higher than has hitherto been reckoned on, and any reports as to the encountering of serious difficulties in the preliminary operation of the equipment may at once be dismissed as false.

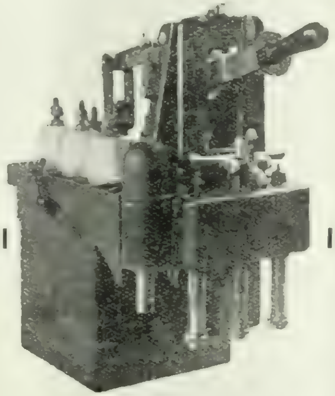
The Process Described.

In view of the interest exhibited in the design and operation of this plant and the importance, not only from a metallurgical and technical aspect, but from the point of view of milling and treatment economics both in respect of capital cost and operating expenditure, it should be worth while again to outline the principal features of the installation.

The ore from the headgear bins passes into a large receiving bin capable of holding 1,300 tons. From there the ore is transported and sorted on three sorting belts to the crushers. There are three sets of crushers, of which two will be in commision and one will be a stand-by set. In the primary set Hadfield's jaw crushers reduce the ore to 2¼ in. cubes. In the secondary set, there are horizontal disc crushers, which reduce the rock to a maximum size of one inch. The whole of the crusher plant of the New State Areas equipment has been supplied by the well-known Sheffield firm of Messrs. Hadfield's, Ltd. From the secondary crushers a main conveyor then takes the rock to the tube mill bins. There are 13 tube mills, each 6½ feet by 20 feet. The old standard size of tubes on the Rand is 5½ feet by 22 feet. Each tube mill has a Dorr classifier and there is no amalgamation. Each of these tube mills is operated by a 250 h.p. motor. Spent pebbles and rounded grits coming from the tube mills are dealt with by grit pebble crushers. The pulp from the tubes is pumped by eight-inch main slime pumps to the slime collectors. Ore enters the water circuit in the crushers, and as soon as the pulp reaches the tube mills it will come into the cyanide circuit and will be crushed in a cyanide solution. The slime collectors are of a new type. They are concrete square tanks. Eight of these tanks have been erected.

The overflow from them goes to three tanks of the same type. The slimes pass on to the Brown agitator tanks. Instead of the standard type of Brown tank, which is 15 ft. by 45 ft., the agitator tanks at the New State Areas are 22 ft. by 45 ft., thus giving double capacity in one tank The slime from the Brown tank next passes to a pulp storage tank and from there gravitates to a Butters filter plant of 600 leaves. The solution from the Butters filter passes through classifiers in the usual way to a deaeration plant and from this to the Merrill zinc dust precipitation presses, the solution being returned to a big storage tank

Tube Mills at the Robinson Deep.



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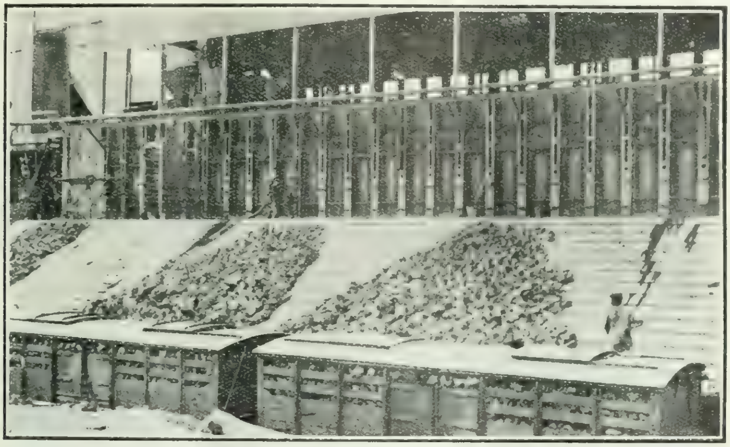
Natal: The Ulster of South Africa.

COLONY ON THE EVE OF GREAT INDUSTRIAL DEVELOPMENTS — £100,000 TO BE SPENT AT NEWCASTLE—INCREASED DEMAND FOR COKE ANTICIPATED — NATAL AMMONIUM TO BE REVIVED — NEW COLLIERY ENTERPRISE — BIG DEMAND FOR NATAL COAL—THE RUBBER AND COTTON INDUSTRIES—EXPANSION AND IMPROVEMENT OF DURBAN AS A PORT.

Natal appears to be on the eve of big industrial expansion. The coal trade is booming and new colliery enterprises are being initiated.

Iron and Steel, Coke and By-Products.

The iron industry at Newcastle appears at last to have a fair prospect of commencing operations on a substantial scale in the near future, and this should stimulate a demand for coke. It is understood that it is proposed to spend £100,000 on the Newcastle enterprise almost immediately, and we learn that some of the biggest and most influential ironmasters in the United Kingdom are at the back of the new amalgamation scheme. The Natal ammonium plant at Mount M'Gwibi, in the Vryheid district, is being revived under the auspices of the big Natal Navigation and Mauritian groups of collieries. Another interesting development in the Vryheid district is the acquisition of a well known but hitherto unequipped coal area by a powerful Transvaal colliery enterprise.



A scene at the Dundee Colliery Company's Plant at Waschbank. The finest by-product plant in South Africa.

At Colenso the new power station in connection with the electrification of the Glencoe-Maritzburg section of the railway line is progressing satisfactorily, and the general scheme, which aims at greatly increasing the carrying capacity of the Natal railways, will be an accomplished fact in the not far distant future.

Rubber and Cotton.

At Howick the rubber factory is speeding up production and is now turning out an interesting variety of products. The cotton industry of the Ubombo Flats is increasing in importance, and attention has been focussed on the alluring possibilities of cotton growing in Zululand and Eastern Natal by reason of the spectacular profits earned by the Condover and Pongola Estates and by private individuals who have sensed the enormous cotton-growing possibilities of this part of South Africa.

One of the new Pits of the Natal Navigation Collieries.

The cotton industry is now about to be linked up with the rubber industry at Howick to a certain degree. It is understood that the intention is to weave fabrics for the manufacturing of tyres.

At Durban the coal trade is satisfactory, and the collieries are reported to be unable to cope with all the orders which are forthcoming.

A Wonderful Outlook.

Durban, with its expanding harbour works, grain elevator, graving dock, oil tanks, additional power plant and prospect of electrification of other sections of railways, all converging on the busiest port of the Union certainly has a future of almost dazzling brilliance.

Natal is indeed likely to prove itself the Ulster of South Africa, and it may be that in the years to come this definition will have a political significance as well as being an industrial fact.

For the time being the opening up of a harbour on the Zululand coast appears to have been dropped, but it is quite likely that it will receive renewed attention in the future, and it may be perhaps that with a shifting of the naval drama of the world from "Home" to Eastern waters, the prospect of opening a new harbour on the Northern Natal coast will be looked at from the angle of the cogency of having a naval base on the western shores of the Indian ocean just as much as the enterprise may be viewed as a purely commercial undertaking.

The Hlobane Colliery, now a member of the Natal Navigation Group.

Improving Port Natal.

With regard to Durban and the improvement of that port, we are indebted to our valuable contemporary, the *Natal Mercury*, for the following illuminating account of activities and improvements at Port Natal. The article was written by a special correspondent and published a few days ago:

Few subjects present more features of absorbing interest than the study of Durban Harbour. Each day witnesses some new development in the general plan of improvement, and furnishes additional evidence of the foresight, ingenuity and enterprise of those who first realised the potentialities of Port Natal. The work that is proceeding also constitutes a tribute to the energy and skill brought to bear in carrying out the various schemes for ensuring its future.

Take, for instance, that striking example of modern engineering, the Graving Dock, which in course of time is destined to play a leading part not only in the growth and progress of Durban, but in the expansion of South African trade. It is questionable whether the people of Durban fully appreciate the tremendous importance of their magnificent harbour. To most the familiar sight of an ocean leviathan slowly making her way from the outer anchorage to the harbour entrance is nothing more than a pretty picture that is quickly forgotten. Little do they realise what the arrival of these stately vessels means to the whole community. It is probably no exaggeration to say that some of the leading steamship lines pay out as much as £20,000 weekly for supplies of coal, produce, etc., purchased in the town and Province. This of itself is sufficient to justify an intense interest in the Port by the inhabitants of Durban. To return to our theme—the progress of the improvements now being effected.

Apart from the excellent progress made in connection with the construction of the Graving Dock, there are numerous matters of importance and interest, foremost among which is

The Maydon Wharf

which has now been completed to a length of considerably more than 4,000 feet. When the scheme of linking up this fine work with the Graving Dock is finished, the wharf will be close upon two miles long, with a depth alongside which will permit of some of the largest vessels being safely berthed at low water. The visitor to Congella will not fail to note what has been accomplished in reclaiming the low-lying swamps. This work was inaugurated nearly twenty years ago, and up to the present 225 acres have been converted into highly valuable land for industrial purposes. The dredgers are still busily at work upon the channel approach to the spacious outer basin of the Graving Dock, their spoil being utilised for reclaiming a further large area of ground.

This scheme of reclamation is undoubtedly one of the most valuable and important in the history of the town and its harbour. It is estimated that when the projected plan is completed the total area reclaimed will measure approximately 735 acres, which will probably be worth in the neighbourhood of from £1,500 to £2,000 per acre. The whole of the area from the point where the wharf finishes right up to the Graving Dock is now enclosed by a retaining bank, behind which spoil is being deposited by the dredgers.

Reference has already been made to the excellence of the coaling facilities at the Bluff. As a result of the situation in Europe, the Natal collieries have lately been supplying large quantities of bunker and export coal to both British and foreign steamers, and the coaling facilities at the Bluff have been tested to their utmost. That they have stood the test admirably the figures relating to shipments abundantly testify. With a view to enhancing the existing arrangements, about 780 feet have been added to the eastern extension of the Bluff quay wall and transporter track, and when the proposed

New Storage Scheme

is completed—it will afford additional accommodation for 60,000 tons, and will be equipped with new mechanical feeding appliances of an improved type—the work of coaling will be greatly facilitated.

Considerable progress has been registered in regard to the oil sites at Island View. The whole area measures about 70 acres, and already three fuel oil tanks, each with a capacity of two million gallons, and three benzine tanks of a million gallons each, together with several large buildings, have been erected. The public will be interested to learn that good progress has also been made with dredging a deep-water channel at the northern side of the reclaimed area, and that a contract has been let for the construction of the projected wharf from which the oil steamers will pump their cargoes direct to the tanks.

Some months ago the *Mercury* announced a proposal to extend the deep-water berthage at the Main Wharf. The plans and specifications for this important and necessary work were recently submitted for Parliamentary approval. They show that the new accommodation will suffice for one of the largest of modern vessels and two smaller ships, the depth at low water spring-tide being 40 feet. It is understood that the scheme makes provision for berthing any shipping which may have to be disturbed as a result of the construction of the additional berthage.

As yet there is nothing of a definite nature to report in respect of the proposed widening of the harbour entrance by removing the incurved portion of the North Pier and the blocks of concrete which have been washed around the old breakwater into the

Channel Entrance

and which constitute a danger to shipping. It is more than probable, however, that this scheme will receive the formal sanction of the House of Assembly during the present session.

A further point of interest is that the harbour workshops are gradually being restored to their former home at the Point. Several years ago some of them were transferred to Durban. Their reinstatement at the Point is doubtless the outcome of the Government's policy of economy, added to which is the manifest advantage of having the whole of the repair work in connection with the harbour carried out with the greatest expedition. The old workshop near the Repairing Quay, which in bygone years proved so useful, is to be equipped with new plant which will materially assist in forwarding the work of this important branch of the harbour administration.

The tunnelling for the improved electric wiring of the deep-water berthage cranes is nearing completion, and before the end of the present year the four

New Electric Cranes

of improved design will have arrived. That the whaling season has begun reminds me that the slipway for hauling up the cetaceous mammals has been improved and is giving the fullest satisfaction.

Another matter worthy of notice is that the septic tank near the Bluff Quay, which has done good service for about ten years, has been enlarged and improved. As this tank treats all the sewerage on the Bluff wharves, its utility and importance needs no emphasis. It has virtually been reconstructed on the latest approved principle under the personal direction of the Harbour Engineer, Mr. Shadwell, is entirely automatic, and when started a few days ago worked quite smoothly. Mention of the Harbour Engineer reminds that the St. Blaze, the sturdy little craft so prominently identified with almost every phase of harbour development, is to be fitted with a powerful pump, which should prove extremely useful for pumping out pontoons and supplying fresh water to outlying craft. It can also be utilised in case of fire.

What has been written will serve to indicate the extent and character of the many and varied improvements effected, and those still in hand, and what is being done to maintain the position of Port Natal as the premier port of the Union.

A special commissioner of the "S.A. Mining and Engineering Journal" will be visiting Natal with a view to the publication of important articles on the mining and industrial enterprises of the Province in the Journal and in a special Natal section of the forthcoming British Empire Exhibition Number of the Year Book.

Reclamation at Durban.

GOLD MINE FOR TRIBUTE

The owners of the WINDHEUVEL GOLD MINE, near Ottoshoop Station, Malmani Gold Fields, are prepared to let the mine on tribute to *bona-fide* operators.

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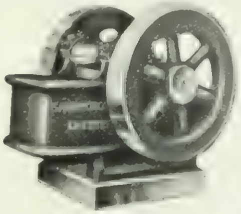
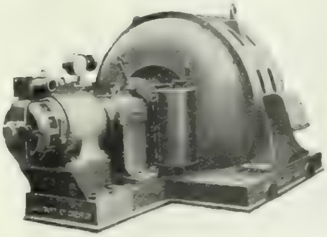


Blake Stone Crusher



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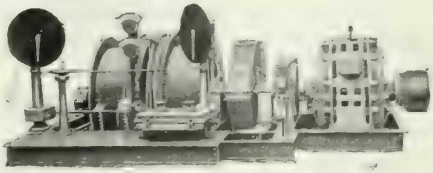
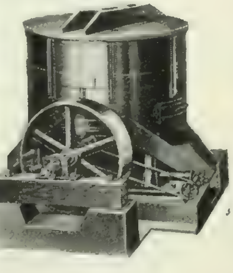


Underground Hoists



Symons Vertical Disc Crusher

Klipfontein Alluvial Diggings.

SPLENDID "FINDS" FOR THE LAWYERS.

(From a Special Correspondent.)

Reports from the Klipfontein alluvial diamond diggings near Hopetown, continue to show good, though erratic, results. The proportion of large stones is high, which means that a few people have good finds, while the majority get little or nothing. A number of stones have also been found at Brakfontein and other river farms nearer Prieska, but as these are at present worked by small syndicates from Kimberley and elsewhere, it is not possible to obtain exact particulars.

The chief interest at Klipfontein at present centres around the litigation between the Government and the owners, Messrs. Pringle and Schweizers, as to the diamond mining rights over these farms. The case has been complicated by claim and counter-claim, interdict and counter-interdict, until it bids fair to rival Dickens' famous case of Jarndyce v. Jarndyce, and whoever wins in the end, it is certain that the lawyers are going to have the best "finds" out of the property.

Very briefly, the Government in the first instance sought to restrain Messrs. Pringle and Schwiezers from mining at all until the farm had been proclaimed; Pringle and Schwiezers then put in a counter-claim for trespass and interference with the diggers. The Government retaliated by asking for an interdict to take effect from March 8 to stop all mining on the farm, and the owners then sought a counter-interdict to prevent the Government interdict from coming into force until the original case had been decided. I believe that is the legal position stated concisely.

On May 1st Mr. Justice Benjamin, in the Supreme Court, delivered a reserved judgment on Pringle and Schwiezers' counter-interdict. It is of some length, and full of legal technicalities, but it amounts to saying that the owners had the right to obtain their interdict, with costs, "subject to the limitation that it should be operative only unless and until the respondents (the Government) should obtain an order declaring the interdicts granted on March 8th executable." Result, Messrs. Pringle and Schwiezers jubilant (so one supposes); their triumph was short-lived, however.

On May 4th the same Judge, in the same Court, delivered another judgment, also long and full of legal reasoning, declaring that the interdicts granted to the Government on March 8th were executable, and could be made operative. Result, the Government is able to stop all work immediately, and the judgment of two days earlier becomes useless.

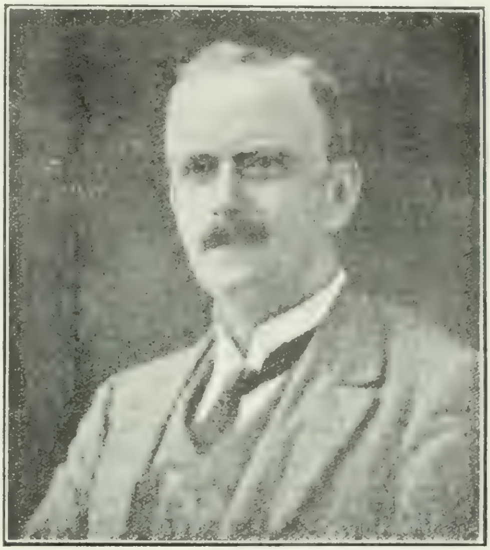
From a legal point of view no doubt these judgments are extremely interesting, and they cost a lot of money to obtain. But how about the poor diggers? Are they to be summarily ousted from their claims, without further notice and without compensation? Common-sense and law very rarely run hand-in-hand, therefore the fate of the few hundred diggers on Klipfontein does not interest Mr. Justice Benjamin and his legal confrères, but one hopes that the Government authorities, having gained their legal verdict, will act with the utmost consideration for these unfortunate people, who find themselves in the legal mills without exactly knowing how they got there.

It may be added that the final decision in the above litigation will settle the question of the ownership of the diamonds, not only on the original farm Klipfontein, but on many neighbouring ones held under similar old titles.

Mining Men and Matters.

Mr. Frederick V. Green, who has been in this country for the past three years as Manager for South Africa for the Baldwin Locomotive Works of Philadelphia, Pa., left Johannesburg on May 19th to return to the United States, where he will take up the position of Manager in New York for the Pittsburg Testing Laboratories.

Mr. Louis M. McKune has been appointed Acting Manager, and takes over the duties heretofore performed by Mr. Green.



Dr. W. A. Caldecott, who has been appointed Scientific and Technical Adviser and Director of the Department of Industries in succession to Dr. H. J. van der Bijl.

ANSWERS TO CORRESPONDENTS.

"Fortunaters" (London) and J. Curtis (Roodepoort).—Your communications have been passed on to our stock exchange correspondents to be dealt with.

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Mining on the Insizwa Range, East Griqualand.

By Geo. Peel.

Lest that the Insizwa Range seems to be forgotten, perhaps the reminiscences of one of the pioneers may be of interest to some of your readers. First let me say that my notes have been little [illegible], as I write entirely from memory; consequently, if I make a few mistakes it must be pardoned to this, but the main facts are as stated, as those whose names are mentioned and who are alive today will probably testify.

In tracing the history of this remarkable range, which may be briefly described as picturesquely mountainous and containing very rich deposits of platinum, nickel, cobalt, copper, and sometimes gold and silver, it will be necessary to go back some twelve or fourteen years—perhaps a few more. Anyway, the commencement of this history is in the days when the "South Namaqua" Syndicate (of which Mr. Phillip Ross was the chairman) was well known on the Johannesburg Stock Exchange.

In the year 1905 or 1906 these properties had only been recently pegged out by Mr. R. M. [illegible] and others, and were not surveyed until later; however, the above-named syndicate took a year's option in the first instance, after sending an engineer who gave a glowing report of their possibilities as a copper proposition only. Little did we know of the other ore contents; in fact it was the metallurgist, Mr. Torrente (afterwards Don Miguel Torrente) who first informed us after his visit to the range of the presence of nickel in greater quantities than the copper.

Our engineer advised us to drive an adit (known to this day as [illegible]'s adit), which, according to his reckoning, would strike the ore body, or contact, at about 150 feet. We drove and drove that adit month after month for 150 feet or thereabouts without success (afterwards some 10 feet more brought success), and many began to think it was wholly a failure. Meantime our year's option had almost run out, and a further year had to be secured at a cost of some £750. I remember addressing (I was acting chairman then) a crowded meeting of shareholders urging them to put up more money, but my appeal fell on deaf ears, or maybe tight pockets, the eventual result being that the syndicate was obliged to relinquish operations.

Before this, however, we had heard that a Mr. Pattison, who was prospecting a very small area in the near vicinity, had "struck it rich" in a shaft 60 or 70 feet deep, and had given his miner strict orders that no one on any account was to be allowed down the shaft to see his strike, which we were naturally anxious to do. So one dark and stormy night an expedition, consisting of four men, with lanterns, rope, etc., [illegible] from the village of Mount Ayliff, six miles distant, proceeded to the shaft, and the descent was made (one of the party being an engineer from the Sudbury Nickel Mines of Canada). The inspection revealed a splendid body of rich ore, upon which driving north and south had commenced. On a subsequent visit, having made friends with the old miner in charge, I was allowed to make an inspection, when I found the ore body greatly extended, and, according to Government analyses, Sudbury assays, etc., of almost fabulous values. It was then apparent why Pattison had no wish for anyone to see his strike, as, having such a small area, he wanted to secure more of the ground before the news of his success had got about.

After the "South Namaqua" Syndicate ceased operations, a local company was formed, and mining was carried on for a period under the management of Mr. Evans, junr., but the working capital proving insufficient, work was stopped. The next to take a hand was a gentleman from East London, but he, after spending some £7,000 to £8,000 under the management of Major Blenkinsop, suddenly closed down before his options had expired.

About this time there was a gent. named McGregor who had pegged a large area three miles or so in extent some miles further along the range, and on the strike of the lode. Pattison acquired this—or thought he had—but found McGregor had considerably oversold interests in it, and, moreover, it was not surveyed and undivided, so Pattison had to get these interests by purchase or otherwise. However, he was so keen on opening up that he did not wait for survey or division or assure himself that there were no more interests to be dealt with, and proceeded with shaft sinking until Mr. Geoff Evans (with whom I was associated) put forward his claim to a third of the area. He made a paltry offer for the interest, which, not being accepted, at once commenced an action in the Capetown courts for ejectment, but this time he had a more difficult nut to crack. Meantime shaft sinking continued, and he again "struck it rich," of which Evans and myself were not aware until one day I received a letter from his old miner—named Hawk—asking for a private interview, during which he told me of the "strike" he had made, and that he was—under orders—burying the rich ore as it came out of the shaft. I at once proceeded to the property to investigate, and found sure enough that he had dug a hole about the size of an ordinary room alongside the shaft into which he was dumping the rich ore and carefully covering it with soil, etc. I at once went to Capetown, and there met Mr. Evans, by arrangement, as the case had been set down for hearing, but Pattison had doubtless heard of my visit to the property and the evidence I was likely to give, so he made haste to withdraw the action and pay costs. The area was then surveyed and interests defined. We, of course, claimed the portion upon which the rich "strike" had been made, and got it. We afterwards floated our portion of the area into a small company and spent some £3,000 upon it, chiefly in driving an adit 261 feet—again with success—but, funds running out, the company was liquidated, Mr. Evans taking re-transfer of the lease, and he has held it ever since.

During the Great War period nothing was done except certain investigations being made by that well known mining engineer of London, Mr. Goochild (who, I think, published some of his impressions of the Insizwa Range in *The London Mining Magazine*), and who afterwards formed the Mount Ayliff Syndicate of London. Work was resumed for a couple of years or thereabouts, but, as their working capital was totally inadequate for properties of such magnitude, they again had to give up.

I may mention that at various times the Range was favourably reported upon by Dr. du Toit and Col. Rose, F.C.S. for the Cape Government, Dr. Corstophine and Dr. Carrick, also by Mr. Honnold and Mr. Chandler for the Corner House, and Mr. Schoch for the Anglo-French Company, and many others, but the courtesy of these last three reports was never extended to us, neither did any of the above engineers mention to us the presence of platinum in the ore.

In conclusion it may be said that the Insizwa Range is an ideal mining country, as no expensive vertical shafts need be sunk, adits, winzes and raises being all that is required, abundance of native labour and timber, waterfalls sufficient for generating power up to 5,000 or 6,000 h.p., coal in the neighbourhood, railway now within a few miles, and 99 years' leases from the Cape Government at the rental of 1s. (one shilling) per acre per annum, with a small royalty on production.

NOTE.—Of the names mentioned, many have passed away, including Mr. Torrente, Dr. Corstorphine, Dr. Carrick—who was lost in the ill-fated s.s. "Waratah."—McGregor shot himself, Pattison was killed in a railway accident, and Hawk was buried at sea.

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The Automatic Tamping Check.

GOOD RESULTS FROM EMPLOYMENT AT FOUR TYPICAL MINES—SAVING IN COSTS AND REDUCTION IN ACCIDENTS ANTICIPATED—A SIMPLE DEVICE WITH A BIG EFFICIENCY.

A simple device which has been patented and perfected locally and which would appear to be an important factor in the economies of mining is known as the automatic tamping check.

The article itself is of the simplest description. It consists of a cylinder of hard material—pottery was at first employed, but latterly local wood has been used—cut diagonally and with grooves left in the flat diagonal faces to take the fuse. Each end of the assembled cylinder belongs to one-half only, and, therefore, when the wedge is in position in the hole and lateral movement is impossible, any pressure on the lower end will cause the one half to slide up, and, on account of the formation of the diagonal face, wedge the whole apparatus firmly in the hole. The greater pressure can never effect more than the one half of the wedge. The device is supplied in a paper band, and simply dropped into the hole on top of the ordinary tamping, which is brought to within nine inches of the collar. It is then given a tap with the tamping stick; the paper band is thereby broken, and the wedge is in place. The wedge is made in all diameters to fit any size of hole.

The claim of the inventor is briefly as follows:

It is well known that if too much burden is placed on a charge the tamping is always blown out. With the use of the new device this can never happen, as the wedge is immovable. It is contended, therefore, that 25 per cent. more burden can be placed on the charge, and this is the most direct benefit to be derived—more rock will be broken for less labour, explosive and power. Another important consideration is that, there being no blow-outs, poisonous fumes will not be discharged into the working places. These gases are generated, of course, in any case, but the inventor claims that the increased pressure obtainable will so raise the temperature of the blast that these will be rendered innocuous. Less disturbance of the wall and no blow-outs will also mean less dust, and Captain Harris, M.C., an artillery officer now employed at Randfontein, who is the inventor, claims that these two considerations will make it possible to run two shifts and employ many more whites. Though the rock broken will not be thrown about the working place and tramming will, therefore, be facilitated, the inventor's opinion is that the rock will be broken finer than it is to-day on account, again, of the high pressure obtainable with his device, and this will lead to economies in crushing. Another important point is that if the article comes into general use on the mines, as there is every reason to suppose that it will, a local industry of some importance will be established, as something like a million wedges a week will be required.

A comparative statement of rock broken in fathoms per case of explosives, without and with the aid of automatic tamping checks on four typical Witwatersrand mines, is as follows:

MINE.	Fathoms broken without checks.	Fathoms broken with checks.	Increased Amount of Rock broken in Fathoms with Tamping Checks.
A	March. 5·6	April. 6·3	·7 — 13%
B	Average for 6 months. 3·9	April. 4·9	1 fathom — 25%
C	Average for 2 months 3·7	April 4·4	·7 — 20%
D	Average for 2 months 4·5	April. 8·9	4·4 — 100%
E	Average for 5 months 4·68	April. 5·6	·92 — 20%

A comparative statement of rock broken with and without automatic tamping checks at a typical Rand mine is as follows:

Date.	Hammer Shifts.	Total Inches Drilled.	Average Inches per Boy per Day.	Total Powder Used 7/8"	Cars Broken.	Tamping Checks Used.	Cars Broken per H.S.	Cars Broken per C/S Powder
Dec 4th to Dec. 9th	142	5388	31·3	634	130	140	·872	81·6
Dec. 11th to Dec. 16th	152	5493	32·3	640	82	Nil	·539	50·8

The following is a summary of results, showing gains through using automatic tamping checks.

Hammer Shifts.	Inches Drilled.	Total Powder Used.	Cars Broken.	Cars Broken per H.S	Cars per Case of Powder	Average Cars per Day
Decrease.	Decrease.	Decrease.	Increase.	Increase.	Increase	Increase
3	105"	6 sticks	48	·333	30·8	8

Average No. of Cars broken per day *with* Automatic Tamping Checks, 21·6.
Average No. of Cars broken per day *without* Automatic Tamping Checks, 13·6

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City Deep, Limited.

PROFIT OF OVER HALF A MILLION— SATISFACTORY DEVELOPMENT POSITION.

Mr. F. R. Phillips, chairman, presided at the annual meeting of the City Deep, Ltd., held in the Board Room, Corner House, May 22nd. The chairman said:—

Gentlemen,

A true comparison of the year's results with those of the previous year is not possible on account of the great strike, which caused the first quarter of the year under review to be, if I may describe the position mildly, an abnormal period. In spite of the strike, which resulted in a direct loss to the company of £33,469, apart from an absence of profit which might otherwise have been reasonably expected, the year's results show a total working profit of £501,044—a very satisfactory figure when you take into consideration the fact that working conditions can only be said to have been normal for the last six months of the year. Although the strike ended on the 17th March, the disorganisation, especially with regard to the native labour force, was such that the results for the quarter ending 30th June were adversely affected. Thus, although the average net price of gold realised for that quarter amounted to 90s. 4d. per fine ounce, as against the lower average price of 87s. 10d. per fine ounce in the last quarter of the year, yet the average profit per ton milled in the two periods amounted respectively to 11s. 1d. and 14s. 10d. In other words, the benefits arising out of the re-organisation of work underground and the increased efficiency of all employees were not up to the middle of the year being fully felt.

Company's Much Improved Position.

I will endeavour to show in the course of my address to what an astonishing extent in a variety of directions the post-strike position of the company has improved; and this improvement is of interest not only to shareholders, whom a section of the community foolishly thinks it fashionable to decry, but to all those whose livelihood, both directly and indirectly, depends upon the mine having a long life and a prosperous career. If you examine the annual reports and accounts, you will notice that, although the total working profit for 1922 was considerably less than that for 1921, the working profit with gold at 84s. per ounce—and it must be remembered that half the year was abnormal—showed a very substantial increase from £270,140 in 1921 to £389,994 in 1922. The corresponding figures giving the additional revenue represented by the difference between the price of gold at 84s. per ounce and the actual price realised amounted to the no lesser sum of £441,376 in 1921, and to only £114,050 in 1922. With the tendency of the price of gold to revert, perhaps more quickly than was anticipated, to its standard value, it is clear that the action taken in effecting a reduction of working costs was not only fully justified but was essential if a large portion of the gold mining industry was to be saved. The average working costs during the year 1922 amounted to 27s. 3d. per ton milled, as against 29s. 11d. for the previous year; but during the last six months of the year under review, that is to say after the re-organisation had been effected, the average working costs amounted to 23s. 10d. per ton, or a decrease of 6s. 1d. per ton as compared with the previous year. The average working costs during the last quarter of the year amounted to 23s. per ton milled. This last figure does not compare unfavourably with the average working costs for the year 1914, amounting to 22s. 5d. per ton.

The balance of working expenditure and revenue account amounted for the year to a total of £510,188 9s. 10d. This amount, together with the unappropriated balance of £326,292 1s. 4d. brought forward from the previous year and a small sum in respect of forfeited dividends, gave a total of £837,255 1s. 7d., and was allocated as follows:—

Expended on capital account ...	£86,382	16	4
Purchase of ex-enemy shares	117,997	9	3
Government and Provincial taxes ...	68,313	14	7
Dividends Nos. 20 and 21 (together 27½ per cent.) ...	337,231	8	0
	£609,925	8	2

leaving a balance unappropriated at the 31st December last of £227,329 13s. 5d., of which balance £66,955 5s. 4d. was represented by net cash, after allowing for liabilities. With reference to the ex-enemy shares, you will remember that last year I said the board considered that the interests of shareholders would be best served by cancelling these shares and thereby reducing the capital of the company by a corresponding amount. Since then the board has considered and approved of a simpler and better procedure. It has now been decided to retain these shares for the company in the names of two trustees and to show them on the asset side of the balance sheet. By this means the capital of the company remains unaltered, thereby avoiding the necessity and expense of calling a special meeting for the purpose of effecting a reduction of the capital. At the same time the company benefits in so far as the payment of dividends is concerned to the same extent as though dividends were payable on a reduced capital, and the procedure has this further advantage, that the company retains complete freedom in the matter of dealing with these shares at some future date, should the occasion arise, either by way of re-issue or cancellation.

Increase in Ore Reserves.

Turning now to the operations of the past year, I would like first of all to draw your attention to the improved ore reserve position, which, as re-calculated at the 31st December last, amounted to 2,815,000 tons, valued at 8·4 dwts. Thus, compared with the previous year, the ore reserve showed an increase of 386.700 tons, though the value was ·4 dwt. per ton lower. The increase in tonnage is very gratifying and is greater than was anticipated. The necessity for improving the ore reserve position was fully realised, as I explained to you last year; and the means by which this improvement has been effected has been the continuance of the policy of greatly increased monthly development footage. The average monthly development footage for the last six months of 1921 amounted to 2,596 feet, but the average monthly footage for the last six months of 1922 amounted to 3,152 feet. Had it not been for the strike, the position, as far as development is concerned, would have been even still further advanced to-day, though it is true that increased underground efficiency now being obtained as a result of the re-organisation following upon the strike accounts in a large measure for the increased footages. The total development accomplished during the year amounted to 29,014 feet. The payable ore developed amounted to 1,043,400 tons, valued at 8·0 dwts. per ton, and of the footage sampled 67·7 per cent. was classified as payable, the average value being 17·3 dwts. over 26 inches.

Shafts and Development.

There is every prospect of the ore reserve position being still further substantially improved during the current year. Monthly development footages are being well maintained, the average being 2,897 feet a month during the first four months of the year. During the past year No. 2 incline shaft was sunk to its final depth, being 182 feet below the 22nd level station. Work is now being pushed ahead as fast as possible to secure new development points on the lowest levels of this shaft, and thus a considerable amount of new ground will be opened up and made available. Similarly the deepening of No. 1 incline shaft is being carried on without delay, so that the large area to the east of this shaft below the 17th level can be opened up in due course. At the end of the year No. 1 incline shaft had reached a point 231 feet below the 17th level station, and up to the end of April in the current year a further 221 feet have been sunk.

While the ore reserve position showed an increase in tonnage at the end of the year, in value it was ·4 dwt. lower than in the previous year. The reasons for this are given in the consulting engineer's report and are briefly as follows:—(1) The ore developed during the year was of slightly lower value than that of the 1921 reserve. (2) Certain high grade blocks in the upper levels of the mine are becoming rapidly exhausted; on account of rock pressure, and for other reasons it has been necessary to mine out these blocks without delay, so as to remove the possibility of their being lost. (3) As a result of the reduction of working costs, the pay-limit used in the valuation of the ore reserve was lower than that of the previous year, so that certain lower grade blocks have now been included in the reserve, thus reducing the average value.

With regard to the circular shaft, the equipment of the top section with wooden buntons and rail guides was completed by the end of the year, and good progress was made in the cutting of the sub-vertical engine chamber and station. It is expected that everything will be in readiness for commencing the sinking of the sub-vertical shaft by September next.

Considerable improvement was effected during the past year in the matter of waste rock sorted out. In 1922 the percentage of waste sorted out on the surface was 13·6 per cent., as against 12·1 per cent. in 1921. Over 16,000 tons of development waste were hoisted and sent direct to the dump, while 3,751 tons were packed underground. In order to facilitate further the handling of this waste, a new bin has been cut at the top of No. 2 incline shaft for the purpose of separating the development waste from this section of the mine from ore sent to the mill. This bin was completed in the early part of the current year, and is now working satisfactorily.

I will now deal briefly with mining operations during the current year. For the first quarter profits have been well maintained, except for the month of February, when, apart from it being a short month, a serious accident, which I deeply regret to say entailed some loss of life, occurred through falls of rock caused by a pressure burst, whereby the main haulage on the eighth level to the east of No. 2 shaft was rendered impassable. Unfortunately, the main ore pass to the west of this shaft was at this time temporarily blocked. This resulted in a considerable loss of tonnage to the mill, to higher costs consequent thereto, and to lower profit. Apart, however, from unforeseen eventualities like the foregoing, it is expected that profits, after taking into consideration the lower price obtainable for gold, will be well maintained throughout the year.

Latest Development Values.

The position with regard to the exposure of development values is very encouraging. Hitherto a large area to the west of No. 2 shaft, extending over a distance of about 2,000 feet, has been uniformly unpayable. It would seem, however, that from below the 17th level this zone of unpayability has been passed.

Dividing the lowest workings of the mine into the following sections, (a) from the western boundary to No. 2 shaft, (b) the area between Nos. 1 and 2 incline shafts, (c) east of No. 1 shaft, the value of the payable ore exposed up to the end of last year over a stoping width of 50 inches has been respectively 7·9 dwts., 8·0 dwts. and 7·5 dwts.

Owing to the faulted nature of the reef in the area east of No. 1 shaft development has in the past lagged behind; it has, however, been accelerated recently, and the above figures show that good values have been exposed.

The 19th level winze No. 1, which has been sunk to a depth of 180 feet roughly in line with No. 2 shaft, has exposed values throughout this distance equivalent to 9·0 dwts. over a stoping width of 54 inches. As this is the deepest development heading in the mine, these exposures must be considered highly satisfactory.

Since the end of the year under review the values exposed in development have, on the average, continued at the recent standard.

Whilst east of No. 1 shaft the grade of ore developed is not quite so good, that exposed in the western and central areas is considerably better than during the past year. To the west in the above section (a) the reef exposed indicates a value of 10·2 dwts. over a stoping width of 50 inches; similarly, in the central section (b) the values exposed average 8·6 dwts. over the same width.

During the first four months of the current year the average percentage of payability in development work accomplished has risen to 79·2 per cent.

You will probably be interested to know of an alteration now being effected in the reduction works. In order to avoid the disabilities of plate amalgamation, it has been decided to substitute concentration by means of corduroy cloth for the recovery of gold in the mill. My this means it is hoped to eliminate as far as possible cases of mercurial poisoning and to minimise opportunities of gold theft. It is also expected that small improvements will be effected both in respect of costs and recovery.

In order to give some illustration of the increased efficiency which is now being displayed, and to which I referred earlier in my address, the following few examples are of interest:—

For the last six months of 1922, with a labour force of 937 white men and 8,048 natives, the average monthly tonnage crushed exceeded 90,000 tons, whereas in the corresponding period for the previous year, with a labour force of 1,066 white men and 8,460 natives, the average tonnage was only 87,000 tons per month. The cost of producing one ounce of fine gold was in the period July-December, 1921, 69s. 7d., and in the similar period for 1922 55s. 4d., a reduction of 14s. 3d. per ounce. The tonnage handled per native boy in the same periods rose from 16·7 tons per month in 1921 to 18·3 tons per month in 1922.

In conclusion, the Board desires to express its very cordial appreciation of the services rendered by the manager, Mr. Sherwell, and the consulting engineer, Mr. Whitehouse, and by their respective staffs.

I now beg to move that the directors' report, balance sheet and accounts for the year ended 31st December, 1922, laid before the meeting, be received and adopted.

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Robinson Gold Mining Company, Limited.

DIFFICULTY OF ESTIMATING LIFE—RECENT RESULTS AND LITIGATION.

The Chairman, Mr. F. Raleigh, in his address at the 33rd annual meeting of the company held on May 22nd, 1923, stated that the results obtained last year are evidence of the soundness of the policy, inaugurated after the strike and revolution early in 1922, of reducing the scale of production from 40,000 tons per month to an average of about 15,000 tons. You will remember that the fall in the price of gold made it necessary to exclude the low grade Main Reef ore body from mining operations. Notwithstanding an average reduction in the price of gold during last year of 14s. 2d. per fine ounce as compared with 1921, the working profit for the year has increased by £21,646, although a direct loss of £24,199 was made during the first three months of the year due to the strike. Whilst working costs have risen by 4s. 4d. per ton consequent on the expenditure during the strike period and the reduced scale of operations, the grade of ore mined has increased owing to the changed mining policy and a recovery of 6·6 dwts. per ton was obtained as against 4 dwts. in 1921. The resulting profit shows an increase for the year of 4s. 7d. per ton. If the first three months of the year are excluded, the profit per ton shows an increase of 8s. 11d.

The working profit for the year is £45,625. After taking into account dividends received on the company's holding of Crown Mines, Limited, shares, difference between the book value of 20,000 Crown Mines shares sold and the sale price, sundry other payments and receipts which are detailed in the Working Expenditure and Revenue Account and the Appropriation Account, there is a net increase in the credit balance of Appropriation Account of £80,387 for the year. This Account shows a credit balance of £225,857, being represented by:—

Shares in Co-operative Concerns, Stores etc.	£31,208
Cash and Investments	194,649
	£225,857

No dividend was declared during the past year. In view of the impending termination of the mine's life, the Board has decided not to make any further dividend distributions.

The reports before you give full information regarding the operations for the past year, and it is only necessary for me to review the general position as it is to-day.

Recent Law Suits.

Since the reports before you were written, the company was prohibited by the Government Mines Department from mining No. 2 shaft pillars above the 14th level, owing to alleged danger to the Johannesburg municipal sewer, which crosses the property in the vicinity of this shaft. This meant that the company was debarred from mining the only payable ore remaining in the mine. An appeal was made to the Government Mining Engineer under the Mines and Works Regulations, and the prohibition was removed. The Municipal Council of Johannesburg then obtained a provisional interdict in the Supreme Court, again prohibiting the pillars from being mined, and this interdict was in turn set aside by the Supreme on the 4th instant, with costs against the Municipality.

Mining operations were at once recommenced in No. 2 shaft. The Municipality has now instituted an action against the company for declaration of rights, damages, etc., and as the matter is *sub judice*, I cannot deal with it now.

During the period of prohibition referred to, operations were kept going on a reduced scale by a general clean up in the mine, and if the removal of the Supreme Court's provisional interdict had not been obtained, there would have been no other course open to the company but to close down the mine, as mining operations could not have been continued any longer without incurring losses.

The consulting engineer's report indicates that at the end of the year only a small tonnage remained in the mine which could be classed as payable, and he estimates that the mine operations can be continued on a diminishing scale until about the middle of this year.

The delay in mining No. 2 shaft pillars, occasioned by the proceedings referred to, which covered a period of about two months, will extend the period of mining indicated by the consulting engineer's report unless the company is again prohibited from mining, at the instance of the Johannesburg Municipality. I am hopeful that the consulting engineer's estimate may be conservative.

The Outlook.

It is most difficult to estimate with any accuracy for how long profitable operations can be continued when a mine arrives at the stage in which ours now is. In any case, mining operations will be on a gradually decreasing stage. The old chlorination dump is now being retreated in the reduction plant, and is expected to yield a small profit. This will increase the tonnage put through the plant considerably above that obtained from the mine.

When the Board is satisfied that profits can no longer be earned, shareholders will be called together to consider the voluntary liquidation of the company.

Regarding the results since the beginning of the current year up to the end of April, the total tonnage treated was 57,300, including 8,000 tons from the chlorination dump, or a monthly average of about 14,300 tons. This tonnage produced 16,357 ounces of gold, which indicated a yield of 5·709 dwts. per ton milled, and is valued at £69,728. Of this sum, working costs absorbed £51,694, equal to approximately 18s. per ton milled, leaving a working profit of £18,034, which is 6s. 3d. per ton milled, and represents an average monthly profit of just over £4,500.

You will have seen from the directors' report now before you that the company last year purchased 17,380 ex-enemy shares which were under the control of the Custodian of Enemy Property of the Union of South Africa. Since the close of the year these shares, together with a further 3,131, purchased, have been transferred into the names of two of your directors in trust for the company, and a Deed of Trust and Irrevocable Power of Attorney have been duly executed, fully protecting the company.

Mr. G. Hildick Smith, who managed our mine so efficiently for many years, has accepted an appointment at the Crown Mines, Limited, and I am sure you will be with me in thanking him for his past services to the company, particularly during last year, which was a very difficult one, and wishing him every success in the future.

Our thanks are also due to Mr. H. Stuart Martin, our consulting engineer, and to the staffs at the mine and head office.

We have been fortunate in securing the services of Mr. T. McAlpine, lately manager of the Knight Central, Limited, as a successor to Mr. G. Hildick Smith.

I now beg to move that the directors' report, balance sheet and accounts laid on the table be received and adopted.

DESIGNS —— DRAWINGS —— TRACINGS

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Meyer and Charlton Gold Mining Company, Ltd.

REDUCED WORKING EXPENSES—WHAT TAXATION COSTS.

The Meyer and Charlton G.M. Co., Ltd., held its annual meeting in the General Mining Building on May 21. Sir George Albu was in the chair and made the following statement:—

In common with practically all the gold-producing companies on the Rand, the report and accounts before you reflect a decrease in profits earned as compared with 1921, the falling off being largely attributable to the strike in the early part of the year under review, and the fact that the average price of gold during 1922 was considerably lower than in the preceding year, and in the case of your company by a slight drop in the grade of ore milled.

You will no doubt appreciate that a fall in the price of gold affects the revenue of a high grade mine to a much greater extent than that of a low grade proposition, for the reason that on equivalent tonnage produces relatively a larger quantity of gold. At the same time, I am pleased to be able to state that, during the nine months of the year following the strike, working costs were reduced by not less than 5s. per ton compared with the average for 1921, thus partially counteracting the effect of the lower price of our product.

The tonnage milled, as was to be expected, shows a drop of over 20,000 tons, and the profit from mining is short of that earned in the previous year by £92,984. A decrease of £9,340 in sundry revenue, mostly attributable to the lower rate of interest ruling for Treasury bills and other means employed for investing our surplus funds, brings the total shortfall in profits to £102,324.

The gross profit for the year amounted to £210,606, and, added to the amount of £192,365 brought forward, gave a total available profit of £402,971. After providing for Union and Provincial Government taxation, and the share of profits payable to the Union Government, amounting in all to £51,780, as well as small amounts for English and French taxes and depreciation on investments, we were able to distribute £200,000 in dividends, representing 100 per cent. on the issued capital of the company, and to carry forward £150,009 to the next account. You will observe that, in order to keep the dividend at the same level as for the previous year, it was necessary to take £42,356 from the accumulated funds of the company, but in view of the improved outlook after the strike your directors felt justified in maintaining the usual dividend, although the actual profit for the year would not in itself have justified such a distribution to shareholders.

The ore from reclamation still forms a substantial part of the total tonnage milled, averaging 40·2 per cent. for 1922. During the first four months of the current year the proportion of ore derived from this source has increased considerably, and we have obtained no less than 36,157 tons, or over 55 per cent. of the total tonnage milled for that period.

Decrease in Tonnage.

The usual re-calculation of ore reserves at the end of the year resulted in an estimate of 326,799 tons of an average value of 13·14 dwts. over a stoping width of 56·6 inches. These figures show a decrease in tonnage and grade, compared with the previous year of 69,088 tons and ·63 dwt. respectively, while the stoping width has slightly increased. As you will see from your manager's report, the estimate of ore in reserve does not include the pillars or hanging-wall and footwall roots, from which our large reclamation tonnage is obtained. Since we have every reason to believe that we can continue for some considerable time to draw a very substantial tonnage from reclamation, it will be readily understood that the total ore contents of the mine are appreciably greater than the declared ore reserve would appear to indicate.

The operations at the mine for the first four months of this year resulted in a profit of £82,923. Working costs were 20s. 9d. per ton milled, or 1s. 1d. less than the average for the last nine months of 1922.

Amalgamation Discontinued.

As a result of experiments which were carried out during last year, amalgamation was discontinued in the early part of 1923, the plates being replaced by corduroy. The change has been effected without any fall in extraction, in fact the figures in this direction show, so far, a slight improvement.

The chief benefits which follow the new method are, firstly, better health for the workmen, owing to the absence of mercury; secondly, the reduction of the chances of gold thefts in the mill to a minimum; and, lastly, a certain saving in cost.

We are now deriving only a very slight advantage from the super-normal price of gold, as most of the difference between the standard price and that obtained is absorbed by the high rate of bank exchange and realisation charges. Since the beginning of May, 1922, the whole output of bullion has been sent to the works of the Rand Refinery, Ltd., at Germiston, to be refined before being despatched as usual to London.

The South African Mint.

I may add that the South African Mint is now in a position to coin the precious metals. With gold at normal price, the local refining and coining of our product will show a substantial advantage to the gold-producing mines, and will also to a large extent stabilise for a long time to come the exchange rates between England and South Africa.

It is again my pleasant duty to express our appreciation of the services of your technical adviser (Mr. Erroll Hay) and your manager (Mr. H. Johnston), who, with the loyal assistance of the officials and staff at the mine, continue to render such a satisfactory service to your company.

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New Goch Gold Mines, Ltd.

GRADE: A SOVEREIGN PER TON—WORK ON RECLAMATION—DISTRIBUTION OF 2s PER SHARE.

The New Goch Gold Mines, Ltd., held an annual general meeting in the General Mining Buildings on May 21. Sir George Albu, who was in the chair, made the following statements:—

The records of the past year, as reflected in the report and accounts before you, show that the loss due to the strike in the first quarter of the year was greater than the profits which were earned in the remaining nine months by £2,214. To this figure must be added French and English taxes, amounting to £129, making the total loss for the year £2,343. This result is a fitting commentary on the ideas and methods of the men who were responsible for compelling our employes to cease work when the great majority would willingly have carried on under the conditions offered to them by their employers. Not only did this essentially low grade proposition, which has been struggling for its very existence for some years, make losses during the first three months of the year amounting to £15,285 as a direct consequence of the strike, but, in addition, a considerable number of men earned no wages for the greater part of the same period. It is indeed fortunate for these men that a settlement was come to which made it possible for us to resume operations with some hope of making ends meet, while still allowing our employes a wage which compares favourably with that paid for similar work in any part of the world.

During the last nine months of the year we were able, by strict economy and an increase in general efficiency, to make a working profit of £10,412, which, added to sundry revenue, gave a total of £13,071. An encouraging feature of this latter period is that working costs were reduced to just a trifle over 19s. per ton milled, or more than 4s. below the average for the previous year. How necessary this reduction was will readily be recognised when it is realised that the gold from all sources for the same period represented only 20.43 shillings per ton milled, this figure being, of course, affected considerably by the decline in the price of gold, which for the whole year averaged practically 14s. per fine ounce less than in 1921.

During the first two months of this year a drop in grade, combined with higher costs, was responsible for the fact that only nominal profits were earned, amounting to £237 in January and £105 in February. The two following months have shown better results, as with an increased tonnage the cost pre ton was reduced, and this, together with a slight increase in grade, allowed of profits of £879 in March and £1,369 in April being declared.

The Ore Reserves.

The ore reserves at the end of the year under review were 101,566 tons of an average value of 6 dwts. over an assumed stoping width of 45 inches, which is a considerable increase on the figures for the previous year, owing to the fact that reduced costs have enabled us to bring in a large tonnage of low grade ore which is now above the pay limit. A substantial proportion of the ore mined is, however, at present being obtained from reclamation, and the rate of exhaustion of the ore reserve depends entirely upon the quality of payable ore which is capable of being recovered from the large tonnage of pillars and Main Reef in the footwall of leader stopes, and which, since no accurate estimate can be made either as to quantity or value, is not included in the official figure of the ore in reserve.

Every credit is due to your technical adviser (Mr. Erroll Hay) and your manager (Mr. Robert Parker) for the unremitting care which they have exercised in the interests of your company at a time when less efficient services might easily have resulted in the closing down of the mine.

You will have noticed during recent years that a substantial credit balance has been carried forward on appropriation account, and that it has been notified from time to time in your directors' reports that the amount was not available for distribution as, in the first place, a considerable proportion was represented by expenditure in connection with the claims leased from the City Deep, Ltd., and the balance represented cash and other liquid assets required for carrying on the business of your company. Part of the cash was earmarked for possible additional expenditure in opening up the City Deep claims, but as a matter of fact we have hitherto been able to provide for this out of working revenue.

Claims Being Developed.

As by far the greater portion of the claims has now been developed, and as we are still earning profits, it is no longer necessary to conserve the whole of the cash funds at present available, and I have pleasure in announcing that your Board has therefore decided to make a distribution of 2s. per share (which will absorb £55,000) out of the accumulated profits, payable to all shareholders registered on June 7 next.

As you will see from the balance sheet, the unappropriated profits at December 31 last amounted to £107,594, of which £35,945 was represented by expenditure in connection with the City Deep claims, leaving a balance of £71,649 represented by cash assets. This amount has since been increased to some extent by the working profits earned during the year.

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West Rand Consolidated Mines, Ltd.

THE YEAR'S RESULTS—EMPLOYERS' TAX SWALLOWS PROFIT—EMPLOYMENT RESTRICTED.

Sir George Albu was in the chair at the annual meeting of the West Rand Consolidated Mines, Ltd., held in the General Mining Building on May 21.

In his speech the chairman said:—

The operations at the mine, as reflected in the report and accounts which have been submitted to you, were, in common with all the gold producing mines of the Witwatersrand, adversely affected by the lamentable strike which took place in the early part of the year. In the first quarter, the period of the strike, working losses to the extent of £38,620 were sustained by your company. During the remaining nine months the profit from ore milled was £35,066 despite the fact that in the meantime the price of gold had fallen considerably. After adding sundry revenue, £5,908, and deducting the loss for the first quarter, the net working profit for the year as a whole appears at £2,354. This amount was, however, more than swallowed up by the employers' tax, which alone amounted to £3,340. The effect of this iniquitous tax on a comparatively low-grade mine, employing a large number of workers, illustrates clearly the arbitrary and unscientific nature of this impost, which takes no cognisance of ability to pay, and must in the nature of things have the effect of restricting employment and stopping the flow of capital to new ventures. If we are, for our sins, to be burdened with a Provincial Council, surely it is time that some equitable and more or less stable scheme of taxation should be evolved, and that the present opportunist methods, which are most detrimental to trade generally, should be discontinued.

Serious Loss.

After making provision for small amounts for English and French taxes and debenture trustees' fees and £19,500 for interest on debentures, the total loss for 1922 was £20,982. As you are aware, the payment of interest on debentures is deferred until September 1 of this year. Owing to the loss caused by the strike, however, it may be necessary to postpone interest payments for a still further period, as the funds in hand at present are required for the programme of development to which I referred at the last annual meeting, and which is being pushed ahead with all possible despatch.

Working costs for the last nine months of the year under review averaged 23·36 shillings, as compared with the average of 27·66 shillings for the year 1922. This is a gratifying feature, and it was only by reason of this reduction, allied with increased efficiency on the part of the men, that notwithstanding the fall in the price of gold, we were able to make profits in this period.

The operations for the first four months of this year gave a working profit of £9,314, and working costs show a still further decline to an average of just over 22s. for the period.

Mercury Eliminated.

We have recently discarded the amalgamation plates in the mill, and have replaced them by corduroy. This change will eliminate the use of mercury, which, as you are aware, has in some cases a deleterious effect on workmen who come in daily contact with it, and will avoid the necessity for locking up a considerable quantity of gold on the plates. The new process also reduces to a minimum the risk of theft in the mill, and, although on this mine no results are yet available, the experience of other properties has been that a saving in cost is effected by this method.

Scarce Native Labour.

Since the commencement of the cold weather there has been a distinct falling off in the native labour supply. As you are probably aware, the Chamber of Mines some time ago consented, at the request of the Union Government, to limit the number of Portuguese natives entering the Union to work on the mines. At the time there was an abundant supply of native labour from within the Union, but a serious shortage has recently been experienced, which, of course, would be accentuated by any considerable revival in the diamond mining industry. In view of the present position, the Union Government has agreed to the recruitment of an additional 3,000 East Coast natives over and above the number now coming in, and it is hoped that this will, to some extent at least, make up the deficiency now existing.

It is needless to remind you that a large and stable native labour force is absolutely essential for the economical working of the mines, and it is to be hoped that the Government will continue to realise this fact, and not put obstacles in the way of the industry in obtaining all the unskilled labour that is required.

Since the date of our last annual meeting, the new pumping plant in the Main Reef section has been completed, and it has been found possible to resume sinking operations at the east shaft. This work is of the greatest importance to your company, since, from the information at our disposal, we have good reasons for believing that the ore to the dip of the present workings will be of a grade above that met with on the upper levels.

In addition to the work at the east shaft, shaft-sinking operations have been prosecuted at the west auxiliary shaft in the Main Reef section, and at the Flora and Rand auxiliary shafts in the Battery Reef section.

Opening Dormant Areas.

This work is being carried out in accordance with our policy of opening up on a large scale the hitherto dormant areas of the mine, particularly in regard to the Violet section, which has been closed down for many years. This section in itself represents a very large area, and our knowledge of its value has been limited to the old records of the Violet Consolidated Mines, which property at one time was reputed to contain the richest ore ever mined on the Rand. The old Violet Company met with faulting difficulties, as a result of which the extension of the reef was lost, and it was closed down apparently for this reason. Our investigations of the past few years have solved these various faulting problems, and the reef in this area has now been intersected beyond the faults at the plane of the sixth level. Where opened up, the values are erratic; but I would point out that the area so far proved represents only a fraction of the whole, and it is with the idea of testing the larger area to the dip of the sixth level that we are now sinking the Flora shaft.

At the Rand A auxiliary shaft I am pleased to be able to inform you that the results of development on the tenth level, which recently has been connected to the Rand shaft workings, are excellent, and we have every promise of a highly payable area being opened up in this section.

The manager's report indicates to you that the ore reserves at the end of the year consisted of 1,085,400 tons of ore, of an average value of 6·2 dwts. This is not exactly an impressive figure, but it should be borne in mind that, owing to the war and its after effects, we have only recently been able to complete our underground pumping arrangements and resume shaft sinking, with the result that it has been impossible to maintain, let alone improve, the reserves. That aspect of the case is now changed, and we are now, for the first time for many years, in a position to open up the property on a large scale. This opportunity is being taken advantage of to the fullest possible extent at the present time. What the future will hold for us I do not care to predict, since the areas which we are now exploiting are, to all intents and purposes, virgin ground. Nevertheless, I may point out that it requires only a reasonable amount of luck in the direction of payability to enable us to place the mine on a very different plane from that which it occupies to-day.

As I have frequently indicated to you, the future of your property as a successful venture rests upon the crushing of large tonnages at a low cost per ton. Everything, therefore, depends upon the results obtained from the new policy of development which we have embarked upon, and whether these results will allow of our realising our ultimate ambition in regard to this company, viz., of increasing the plant to a capacity commensurate with the size of the property.

I have again great pleasure in expressing our appreciation of the services of your technical adviser (Mr. Errol Hay) and your manager (Mr. G. D. Stephen), who, with the officials and staff on the mine, continue to forward the interests of your company.

Roodepoort United Main Reef G.M. Co., Ltd.

LOSS OF £10,841—AMALGAMATION POSSIBILITIES.

The Roodepoort United Main Reef G.M. Co., Ltd., held an annual general meeting in the General Mining House on May 21. Sir G. Alba occupied the chair, and in his opening speech made the following statement :—

At the last annual meeting I informed you that, owing to the unsatisfactory results of operations at the mine, it had been decided to close down as soon as all the valuable material had been reclaimed from the underground workings. As we anticipated, this was the position at the end of July, and from that time no ore was drawn from the mine. Had we been allowed to work continuously from the beginning of last year, we should in all likelihood have been able to carry out our programme without an actual working loss to the company, but, as you will see from the accounts submitted to you, the strike in the early part of the year caused losses to the extent of no less than £15,683 during the first quarter. From April to the end of July mining was still carried on, and from that time until the end of 1922 clean-up operations in and around the reduction works were in full swing.

The operations for the last nine months of the year, including revenue derived from the clean-up, showed a small working profit of £258, leaving a net loss on working account for the twelve months of £15,425, from which, however, must be deducted sundry revenue amounting to £4,584, giving as a result for the whole year a loss of £10,841. This is exclusive of interest on advances, which amounted to £29,635. You will see, therefore, that the deficit for the year totalled £40,476. This large shortfall would in the ordinary course have resulted in a corresponding increase in the indebtedness of your company, but sales of plant and stores, combined with the realisation of gold in transit and the application of cash previously required to carry on business as an active mining concern, have enabled us to reduce the amounts owing from £403,797 to £358,061.

Liability to Phthisis Board.

You will observe that there is a note on the balance sheet to the effect that at the end of 1922 there was an outstanding liability to the Miners' Phthisis Board for the terminal assessment which became due on the closing down of the mine, the total amount of which, at the time of framing the accounts, had not been definitely ascertained.

This liability has now been fixed at a total of £30,151 17s. 4d. The General Mining and Finance Corporation, which holds a bond over all your property, has conditionally guaranteed the payment of this sum, in return for which the Minister of Mines has removed the name of your company from the list of scheduled mines under the Act.

The clean-up of the reduction works is now completed, and I am pleased to say that the gold recovered has come well up to our expectations.

Since the closing down of the mine, a considerable portion of the machinery and plant connected with the various shafts and the workshops has been sold, and we are making fair progress with the disposal of the remainder. In addition, the mining ground forming the extreme eastern and western portions of your property, known as the Kimberley East and No. 3 sections respectively, has been sold. A certain number of worked-out claims, principally in the old United section, have been abandoned as useless and of no value.

Kimberley Main Section.

The mining title to the mynpachts and claims forming the Kimberley Main section, which is by far the largest and most important portion of your property, is for the present being maintained. On this portion is situated the large and up-to-date reduction works, the essential parts of which we propose to keep intact, with a view to the eventual resuscitation of mining operations.

Improvement in Durban Deep.

As you are aware, the prospects of our immediate neighbour on the west, the Durban Deep, have recently greatly improved, and, if the improvement in values is maintained in depth, the adjoining area on their eastern and southern boundaries must become more attractive as a mining venture. As the ground to the immediate dip of the Durban Deep, together with a large part of your southern area, is still intact, it is hoped that an amalgamation of these interests may be possible as a prelude to the resumption of active mining operations on the combined area, which would have the great advantage of being already equipped with an efficient reduction plant.

I do not wish for the present to enlarge upon this subject, but merely to indicate that this stretch of the Rand still has valuable possibilities, which must not be lost sight of.

Books Received.

"SOUTH AFRICA'S WHO'S WHO."

MR. KEN DONALDSON'S PRODUCTION.

We are in receipt of the 1923-24 edition of this useful work. It has been brought up to date, and contains biographies, and in most cases portraits, of most of the leading men of South Africa in every department of life. Though the editor regrets that many people to whom application was made failed to send in accounts—and there is no charge for insertion—the number who responded is surprisingly large, and the volume contains several hundred biographies. It is, of course, difficult to obtain particulars in a scattered country like South Africa, but as far as we have been able to test the book, the compiler has been most successful and accurate. The official guide to South Africa includes a complete directory of officials, including the Governor-General, Ministry, Administrators, secretaries, departmental heads and staffs, Senators, members of the House of Assembly, Provincial Councils, etc., also a similar list for Rhodesia. A useful feature is a full list of South African Honours, which covers 7½ closely-printed pages. The "Who's Who in Business" covers a large section, and will be found eminently valuable to business men; it comprises every trade and profession in the Union and adjoining States of Rhodesia, Portuguese East Africa, Nyasaland, and the Belgian Congo. The volume has been well printed by the "Cape Times," Ltd. It is edited and published by the proprietor, Mr. Ken Donaldson, 7, Markham's Buildings, Capetown, price 30s.

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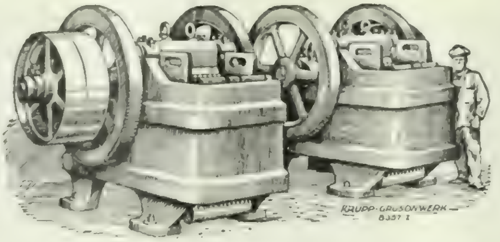

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TOPICS OF THE WEEK.

The Albu Meetings.

Full reports of the proceedings at the annual meetings of the subsidaries of the General Mining and Finance Corporation will be found in another part of this issue. Sir George Albu presided, and reviewed the progress of each company in detail. The Meyer and Charlton still groans under the weight of excessive taxation. The profits of the West Rand Consolidated were eaten up by the employers' tax. The Aurora West showed a substantial drop in working profits, viz., from £8,210 in 1921 to £2,939 for last year. What Sir George Albu called "the deplorable strike" of 1922 was, of course, the greatest factor contributing to the reduced profits. "It is a matter for some congratulation," added Sir George, "that during the remaining nine months of the year, mainly owing to the reduction in costs and the increase in efficiency which followed on the strike, we were able to declare working profits, inclusive of sundry revenue, amounting to £16,1[illegible], or nearly double the amount earned on the whole of 1921." The company is now out of debt, and, as the chairman indicated, on the eve of paying a dividend. The position of the New Goch is better than one had expected. The Cinderella is possibly one of the most interesting mines of the group, and Sir George Albu summed up the position by stating: "We have been subjected to more or less irresponsible criticism from time to time for not reopening the mine, but you may rest assured that your directors are leaving no stone unturned to effect this object as soon as some reasonable scheme can be devised for that purpose, either in conjunction with our neighbours, the East Rand Proprietary Mines, or on our own account." The speeches at the annual meetings of the Rand Collieries, New Steyn Estate, and Sacke Estate call for little comment. The New Steyn, in view of the improving position of the Durban Roodepoort Deep, may yet come into its own, and become an active producer.

The Conciliation Board; Case for the Crown Mines.

The Industrial Conciliation Board appointed by the Government to enquire into the demands of mine mechanics for a 30 per cent. increase in wages finished hearing evidence at the beginning of the week. On Monday a lengthy and carefully-reasoned argument by the Crown Mines, Ltd. (the Crown Mines is the test case company opposing the demands), on the evidence led on the wages question was heard. After reviewing the alleged circumstances which have given rise to the demand and the recent history of the Mechanics' Union *vis-a-vis* other unions and the Chamber of Mines, the argument proceeds:—

The company submits that it has been clearly shown that the mechanics' unions are parties to the existing relative wages position as between the various classes; that, as shown by Mr. George, the rates of pay of the various classes hang together; and that not only is there no argument for an increase in mechanics' wages on account of their present less favourable relative position as compared with 1914, but that any increase given to mechanics upsetting the existing relative position would be followed inevitably by similar demands from other classes, involving the mining industry in the vicious circle of consequential increases in wages from which it has just escaped.

As regards the second ground for the demand for a 30 per cent. increase in the wages of mechanics, viz., the increase which has taken place in the cost of living as compared with 1914, the Board is in possession of the official figures as to the actual percentage increase in the cost of living. It is only through those official figures that a correct estimate of the cost of living position can be arrived at. A few rough statements of expenditure by mechanics who say they cannot come out on their present wages, but could on £8 a week, are valueless. It would be equally easy to bring a similar number of witnesses who would state with equal sincerity that they could not come out on £8, £10 or £15 a week.

The company submits that on the cost of living argument, as on the relative wages contention, the mechanics' unions have not established their case. Incidentally, the Board may be reminded that, as shown in the evidence, the cost of living basis is rapidly becoming discredited throughout the world as a basis for fixing wages.

The company would further point out that the Mining Industry Board, before whom the mechanics' unions put the same arguments for an increase in mechanics' pay as have been put to the present Board, made no recommendation for such an increase.

But although the two grounds put forward by the representatives of the unions in support of the demand for a 30 per cent. increase in wages have been thus, it is hoped, effectively disposed of, it is thought to be as well to deal with certain other points which have been raised in the course of the inquiry.

There is first the [illegible] suggestion that an increase of the wages would not be followed by a demand from other employees. Now, in regard to this suggestion, it is proper that the line of argument used above in combating the mechanics' demand would be used by the other sections in support of their demands if the mechanics were granted an increase in wages. The other unions would say: "Here is a scale of wages actually in force, embodying a relative position of all classes of employees, which was accepted by the mechanics' unions. Now that you have altered the balance of this scale by increasing the wages of mechanics; you must restore it by increasing our wages."

How Rand Wages Hang Together.

As already stated, the various rates of pay on the Witwatersrand gold mines form a scale of wages that hangs together relatively. At one time or another the consent of all the parties concerned has been given to their relative position in that scale. It is true that the cancellation of the cost of living allowance after the strike was not by consent; but that does not in any way affect the fact that the standard rates of pay to which the cost of living allowance was added had been agreed to by all the unions, and that it is these standard rates of pay which it is now desired to alter. However, it seems unnecessary to labour the point, in view of the evidence given showing that winding engine drivers, stationary drivers and firemen, and rockbreakers have already applied for increases in wages on at least no weaker grounds than those advanced by the mechanics. (The Board may be reminded that these demands have been refused.)

The company submits that it has been established that any increase in the wages of mechanics would start the ball of wages demands rolling once again, producing claims by other classes of European employees for similar increases, and subsequent demands by the natives for equivalent consideration. In other words, that it is impossible to consider the mechanics' demand as a matter that stands by itself. A 30 per cent. increase in the wages of mechanics must be considered as entailing a 30 per cent. increase to all European employees, and approximately the same to the natives.

It has been shown in evidence that the economic position of the industry in the event of any such increase of wages would be so grave that in no circumstances—even if it had been justifiable on the two grounds on which it was put forward—could the demand have been acceded to.

What the Evidence Has Shown.

The evidence from the Crown Mines shows the enormous extent to which a 30 per cent. increase in wages would have destroyed the potential value of that property to the country. No less than £7,000,000, which would otherwise be expended in South Africa, would have been lost to the country through the increase in costs following the increase in wages; while an increase in wages confined to Europeans alone would have meant a loss of £5,000,000 to the country. And, be it noted, those are net figures, after allowing for the increased expenditure in the country through the extra wages.

As regards the whole industry, Mr. Samuel Evans showed that a 30 per cent. increase in costs would force mines down to the pre-strike position (but with no gold premium), and would practically destroy the industry.

The effect of an increase in costs on individual mines has been explained to the Board by Mr. Roberts in the example of the Simmer Deep mine. The accumulative effect of even small additions in costs was there shown to be worthy of the most serious consideration. It is very easy to say that (say) a 3d. per ton increase in costs means little, but the snowball effect shown by Mr. Roberts in the Simmer Deep case is so important that no apology is needed for specially directing the Board's attention to it.

Another important point of which the Board may be reminded is that, although the mines are at present enjoying an abnormally favourable native labour supply, when the inevitable and normal condition of shortage returns, the position of the industry will be even less favourable than it is at the present moment. With a reduced native labour supply comes a reduced tonnage, and with a reduced tonnage an increased level of costs, accentuated by the snowball result already referred to.

It is true that Mr. Crisp in his evidence flatly declared that he would rather the mines closed down and the industry ceased operations than pay a rate of wages less than that which he or his union considered a reasonable remuneration. Such rash and foolish ideas applied to an industry like the Witwatersrand gold mines, on which the existence of the community, and the solvency of the whole nation depend, only demonstrate the shortness of view of the individuals and unions who put them forward.

Mention has been made by the mechanics' unions of high wages to mechanics in other countries, and, by the Crown Mines' witnesses, of at least equally low wages to mechanics in the United Kingdom. Similarly, reference has been made to the high wages obtained by mechanics in various industries in South Africa, e.g., the printing and building trades. Sufficient evidence was led, however, to show that wages which may for a time be paid by industries which can pass on their increased costs are not necessarily payable by the gold mining industry, which is unable to pass on costs. In the United States and Australia, high wages and high costs generally have seriously crippled the gold mining industry. Mr. Owen Letcher has shown that in these countries the gold production has fallen off by more than one-half since 1914, the falling off being largely due to increases in the working costs. It is true that Mr. Crisp appeared inclined to suggest that the gold mines were able to pass on costs through the gold premium. That point, however, was not pressed by the unions' representatives, and in any case it was effectively disposed of by the evidence that on the Witwatersrand the gold premium is practically non-existent, while costs are 20 per cent. above the 1914 level; that since 1914 the extra costs to the industry have totalled £40,000,000, as compared with the total gold premium of only £25,000,000; and also that the average gold premium during that period was only 9 per cent., and the average increase in wages 22 per cent.

The company submits that this essential difference between the gold mining industry and other industries in regard to working costs has been so clearly demonstrated that the fact that railways, municipalities, or secondary industries generally pay higher wages than the gold mining industry has been shown to be no reason why the gold mining industry must pay those same wages. Still more clearly untenable is a claim that wages in other countries which have brought ruin to the gold mining industry there should be applied to the gold mining industry on the Witwatersrand.

In the examination of Mr. Samuel Evans by Mr. Macfie, the point arose as to whether by some change in the currency policy of the great European countries the position of gold mining could be so improved that still higher wages than those obtainable to-day might be paid. On this point Mr. Evans was very definite that the gold mining industry is entirely without the power to alter the currency policy of Europe. The company submits that abstract theories of what might be the position of the mines if certain currency policies were adopted in Europe cannot afford any ground for endorsing the wages demand now under discussion.

The mechanics' unions having persistently sugested in the course of their evidence that the scale of wages on the gold mines is too low, the company feels bound to bring to the notice of the Board what, in its opinion, is undoubtedly the fact, that far from the scale of wages on the mines being too low, it is too high for the good of the country.

It has been shown that the Witwatersrand scale of wages, which originated during the early days of the Kimberley diamond mines, has tended to spread throughout the industrial centres of the country, until at the present moment the wages in many of those industrial centres are even higher than on the gold mines.

At the time of the Economic Commission in 1913, the Witwatersrand scales of wages were found to be higher than in any other country in the world; that is to say, wages here were exceedingly high in 1913. Allowing for the increase in the cost of living since that date, and for the increases in wages, it is clear that the 1913 high wages position is still practically maintained.

Mr. Evans has shown that the primary producers—the farmers and the gold mines, the prices of whose products are fixed by conditions over which they have no control—are penalised by the increase in working costs due to those high wages in the industrial centres, which increase in costs the primary producers are unable to pass on.

It was clear from the evidence of Mr. Cousins and Professor Lehfeldt, and also of Mr. Evans, that the total production of South Africa is not sufficient to allow of an average wage to every European adult male inhabitant of even as much as £300 per annum. Now the mechanics on the Crown Mines are obtaining at the present time over £350 per annum, and the workmen in the printing trade over £420 per annum, while the mechanics actually ask to be increased by 30 per cent., or to an average of £460 per annum. Can it possibly be contended that these specially favoured manual workers are entitled to such a much greater share of the national production than the average that is available for the whole European adult male population?

As regards the remuneration of capital, Professor Lehfeldt, Mr. Evans, and the statement submitted by the Chamber of Mines have shown that on the Witwatersrand capital is not obtaining anything like an adequate return and Mr. Letcher has explained how the productive capacity of the Witwatersrand and the flow of capital for the opening up of new mines are restricted by the high level of costs. On the other hand, as shown above, European labour on the Witwatersrand is obtaining a very high return—far too high for the productive capacity of the country, and far more than its fair share of the product.

It is therefore submitted that not only is there no case whatever for an increase in the wages of European employees, but that in the public interest there is a very strong case indeed for a general reduction in the scale of remuneration of European workmen in the industrial centres of the Union.

Overtime and Drill Sharpening.

As regards the overtime and drill sharpening demands, the Board is already aware of the company's claim on those matters. The only evidence of any complaint in regard to the amount of overtime was that of Mr. Elsdon, and his evidence was merely a second-hand statement that several men (names unstated) had complained to him that there was too much overtime worked on the Crown Mines. Even in those cases there was no allegation that the overtime complained of was unnecessary, and several witnesses brought forward by the unions and employed on the Crown Mines denied that any unnecessary overtime had come to their knowledge. The company submits that the mechanics' unions have entirely failed to establish their case in regard to overtime, and that even on their own evidence the balance of evidence is in favour of the company.

Similarly as regards drill sharpening, the Board will remember that the claim was for "re-employment of white drill sharpeners: that is in conformity with the findings of the Mining Industry Board." But there is no evidence that there has been any non re-employment of white drill sharpeners on the Crown Mines, as compared with either the position before the strike or at any other time. It is therefore submitted that there is no case for the company to meet on this point.

Rand Yields 88 per cent. of Employers' Tax.

In the Provincial Council at Pretoria Mr. Brown asked the Administrator: (1) Will he state the amount realised from the Employers' Tax in the financial year 1922-1923, and (2) what is the amount collected from (a) the Witwatersrand, (b) Pretoria, (c) rest of the country? The reply was: (1) £172,264; (2) (a) Witwatersrand £152,120, (b) Pretoria £6,133, (c) rest of the country £14,011. These figures show how greatly the revenue of the Transvaal depends on the Witwatersrand area and how comparatively little the rest of the Province yields to the Provincial coffers.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

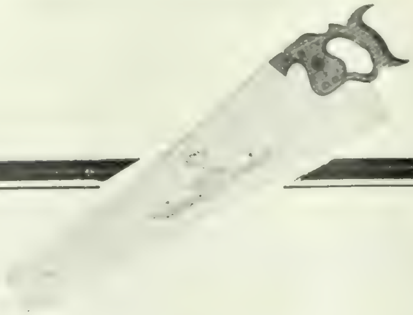
The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

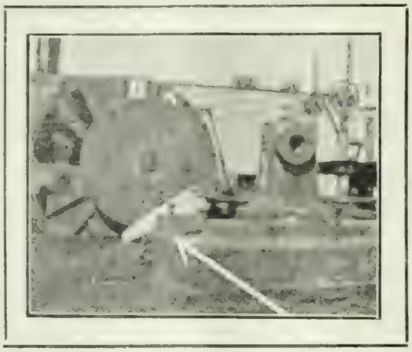
A Special Commissioner of the Journal will be leaving shortly for Rhodesia and Natal with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

Messina Copper Company and the Railways Board.

The report of the Railways and Harbours Board for last year contains the following statement as to the preference given to the Messina Copper Company: "In the purchase of copper required for the electrification of the Natal main line, with a view to enabling the Messina Transvaal Copper Company, Ltd., to resume operations, the Government decided that the Administration should pay the company an amount of £5 per ton (2,240 lb.) over and above the market price of electrolytic copper, up to a tonnage equal to the requirements of the Railway Administration for certain of the contracts for the electrification of the Glencoe-Maritzburg section. The Administration's requirements were estimated at 2,000 tons, and the preferential payment of £5 per ton to the Messina Company was limited to that quantity. The original intention was that the Messina Company should supply to the Administration's contractors 2,000 tons of electrolytic copper at a price which would be not more than £5 per ton above the market price. As the origin of the copper used in producing electrolytic copper was not of any importance so long as copper of the required standard was obtained, and as it would have cost a considerable sum to ship copper produced at Messina to Europe for conversion into electrolytic copper, there was nothing to be gained by actually sending Messina copper to Europe for treatment. It was agreed, therefore, that, although the electrolytic copper supplied by the Messina Company would not necessarily be prepared from South African copper, the £5 per ton preference on a tonnage of 2,000 tons would be paid, provided the company undertook to carry out its undertaking to resume operations at the mine until at least an equivalent tonnage had been produced. Subsequently it was pointed out that to purchase 2,000 tons of electrolytic copper as one order would have the effect of raising the market price. It was therefore agreed, in order to prevent the purchase of copper at a considerably increased price, to accept from the Messina Company a guarantee bond of the sum of £10,000, this sum to be held by the bank during the existence of the guarantee, the bank releasing to the company £5 for every ton of copper produced from the mine up to 2,000 tons. While wholly sympathetic towards the development of South African industries, the Board was unable to agree with the decision to grant the Messina Company the preference of £5 per ton, contending that if any preference beyond the 5 per cent. provided for in the Tender Board Regulations were to be given, it should be borne from general revenue, and not form a charge against the railway revenue. The Commissioners were not unmindful of the benefit to the local community through the reopening of the Messina mine, and that the country generally would benefit through the incidence of increased employment and consequent increased spending power."





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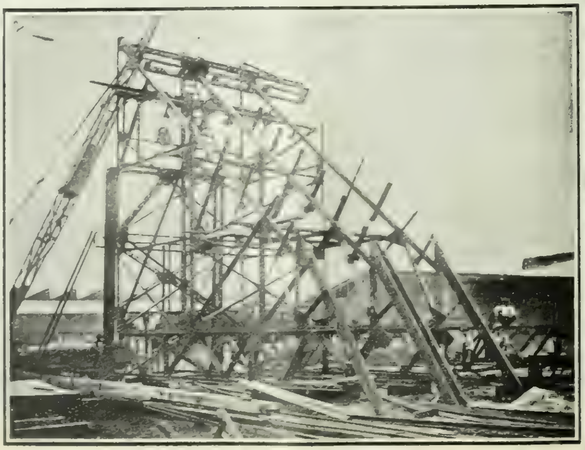

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Aurora West United G.M. Co., Ltd.

RESULTS VERY SATISFACTORY—DIVIDEND PROSPECTS.

At the meeting of the Aurora West United Gold Mining Co., Ltd., Sir George Albu, who presided, said: Gentlemen,—The financial results for the year under review reflect a substantial drop in working profits, which in 1921, inclusive of sundry revenue, totalled £8,210, as compared with £2,939 for the past year.

The heavy loss incurred by your company on account of the deplorable strike, in the early part of 1922, of the white workers employed in the gold and coal mining industries, is, of course, by far the greatest factor contributing to the reduced profits. As you will see by reference to the profit and loss account, the loss sustained during the first quarter of the year, the period of the strike, was no less than £13,218.

It is a matter for some congratulation, however, that during the remaining nine months of the year, mainly owing to the reductions in costs and the increase in efficiency which followed on the strike, we were able to declare working profits, inclusive of sundry revenue, amounting to £16,157, or nearly double the amount earned for the whole of 1921.

From the net working profit for the year £2,939 must be deducted £1,290 interest on loans, leaving an amount of £1,649, which has been carried to appropriation account.

Lower Working Costs.

Working costs for the period during which normal conditions obtained averaged 21·19s. per ton, as compared with 27·35s. for 1921, a decrease which must be considered eminently satisfactory. As an offset to this, however, the revenue per ton fell from 28·42s. to 25·26s., due entirely to the fact that the average price obtained for gold during 1922 was about 14s. per fine ounce less than the average for the preceding year.

As a matter of fact, the grade recovered per ton milled was ·21 dwt. higher than in 1921, so that, had the price of gold remained stationary, the revenue per ton would have reflected an increase instead of a decrease. The premium received during 1922, however, averaged approximately 8s. per fine ounce, or, roughly 2s. 2d. per ton milled, so it will be seen that even during the last nine months of the year the working profit of 3·07s. per ton milled was largely dependent on the fact that an abnormal price could still be obtained for our product.

Payable Levels Extended.

The ore reserves, at 191,280 tons, show a satisfactory increase over the figure for the previous year. Development in the lower levels of the mine continued to expose good values, and it was also found possible, owing to the reduction in working costs, to include in the ore reserve certain blocks of ore which previously would have been below the limit of payability.

This had the effect of decreasing the average value from 6·9 dwt. over 42in. to 6·1 dwt. over 40in., but this is a fitting commentary on the changed conditions that, basing our calculations on the standard price of gold, there is a larger margin of profit on the lower value than could formerly have been made on the higher.

Turning now to the results for the first four months of this year, I am pleased to be able to inform you that working costs have been still further reduced to an average of 19s. 5d. per ton, and that as a result we show a working profit of £8,102 for the period. This is all the more satisfactory when we consider the fact that we are now benefiting to a slight extent only from the premium on gold, which is mostly absorbed by realisation charges, notably the heavy exchange rate payable to the local banks. The improvement in the profits referred to enabled the company for all practical purposes to free itself from debt at the end of March, the cash on hand plus gold in transit at that date being in excess of all amounts due to creditors. It is to be hoped, therefore, that future profits will be available for dividend purposes.

A further satisfactory feature of the reduced costs is that we are now able to draw a considerable portion of our tonnage from reclamation, and this will naturally have the effect of conserving the block ore reserves, thus prolonging the life of the mine. Your directors have recently entered into an arrangement with our neighbours on the west to remove part of the boundary pillar between their property and ours, we have also obtained the right to mine on a royalty basis in certain claims adjoining our western boundary.

It is again my pleasant duty to record our appreciation of the valuable services rendered by your technical adviser, Mr. Errol Hay, and your manager, Mr. Rose-Innes, who continue to guide the technical affairs of the mine.

Rand Collieries, Ltd.

SIR GEORGE ALBU CALLS FOR HALT IN TAXATION —CRIPPLING EFFECTS ON RAND COLLIERIES.

Sir George Albu reverted to the crippling effects of Union and Provincial taxation on industrial enterprise in his address to the shareholders at the annual meeting of Rand Collieries, Ltd., held at General Mining Building recently. He said: Gentlemen,—The large mining area held by your company still remains dormant, and in the face of the present political situation in this country, this will occasion little wonder. It is surely time thinking men realised that, if any real development is to take place in the near future, a halt must be called to the present practice of piling up taxation on the mining industry by the Union Parliament and the Provincial Council.

As far as actual mining costs are concerned, the position on these fields has undoubtedly improved to a marked extent during the past year, but I need only cite the fact that no offers were received by the Government for the Geduld East area, which was recently advertised for tender, in order to demonstrate that capital will not be interested in mining ventures, although attractive in themselves, unless there is some guarantee against the imposition of excessive burdens of taxation. Cannot our politicians, especially (judging from their utterances) our Nationalist and Labour friends, see the obvious likelihood that a continuance of their present attitude may literally kill the goose that lays the golden eggs by rendering mining propositions in South Africa so unattractive that people with money to invest will seek other fields for its employment?"

With regard to the Small Holdings referred to in the directors' report for the past year, there was further delay in the granting of the certificate by the Minister, chiefly owing to additional difficulties which were raised by the Government departments concerned. We have now been notified, however, that everything is in order, and that as soon as certain small plots are transferred to the Government for educational and other purposes the certificate will be issued. In the meantime negotiations are well forward for the sale of some of the plots, and we hope to dispose of the remainder within a reasonable period.

Cinderella Consolidated Gold Mines, Ltd.

THE CINDERELLA SETTLEMENT WITH E.R.P.M.—TAXATION DELAYS OPERATIONS.

Presiding at the annual meeting of the Cinderella Consolidated Gold Mines, Ltd., Sir George Albu said:—

Gentlemen,—The report and accounts now submitted to you show that revenue from rents, interest, etc., which for the present forms our sole income, is less by £389 than for the previous year. The decrease is solely attributable to the strike in the early part of last year, one effect of which was that some of our tenants were unable to pay their rent, while others moved to different parts, leaving the houses vacant for varying periods.

On the other hand expenditure increased by £1,066, the items chiefly affected being insurance, maintenance of property and legal expenses. The increase in insurance is due to the fact that it was thought advisable to insure your property on the mine against riot during the strike, and this was done at a cost of £413. During the year it was found necessary to spend fairly large sums in keeping the buildings in proper repair.

Relations with E.R.P.M.

The legal expenses were incurred in connection with a difference of opinion between us and our neighbours, the East Rand Proprietary Mines, as to the interpretation of an agreement which was entered into with them some years ago with regard to certain underground arrangements affecting both companies. The matter was finally settled by a fresh agreement, providing that this company has the right to continue its third level through ground belonging to the East Rand Proprietary Mines, and is given the option to purchase certain claims to the south of this drive.

The balance of expenditure over revenue for the year was £7,534, and after taking into account £2,344 received in respect of machinery sold during the year, the cash position reflects a decrease of £4,567, and at the end of the year showed a balance at the bank, and on hand, of £12,321.

Why Operations are Delayed.

At the last annual meeting your chairman expressed a hope that within a reasonable time conditions might be favourable for formulating a scheme for the resumption of operations on your mine. That time, however, has, unfortunately, not yet arrived, and, to say the least, will not be hastened by the attitude of the Union Parliament on the subject of phthisis legislation, coupled with the vagaries of the Transvaal Provincial Administration with regard to taxation.

We have been subjected to more or less irresponsible criticism from time to time for not re-opening the mine, but you may rest assured that your directors are leaving no stone unturned to effect this object as soon as some reasonable scheme can be devised for that purpose, either in conjunction with our neighbours, the East Rand Proprietary Mines, or on our own account.

The balance sheet and directors' report show that close upon one and a quarter million pounds sterling have been spent on shaft sinking, development, machinery and plant, etc., apart from £314,054 in respect of claims purchased for cash from 1910 to 1916. Surely these figures form a very practical demonstration of the faith of your board in the potentialities of the company—a faith which is still maintained notwithstanding the present dormant condition of the property—and must be of infinitely more real significance than the irresponsible criticism to which I have just referred. Clearly it is much more in the interests of your company to resume active operations than in the instance of any of the individuals or associated bodies who from time to time agitate for the re-opening of the mine.

New Steyn Estate Gold Mines, Ltd.

SIR GEORE ALBU AND FUTURE PROSPECTS — AMALGAMATION SCHEME FORESHADOWED.

Interesting developments in connection with the New Steyn Estate Gold Mines, Ltd., were foreshadowed by Sir George Albu when presiding at the annual meeting of shareholders recently. He said: Gentlemen.—The revenue at £2,589, as shown in the accounts now before you, is considerably less than that for the previous year, mostly on account of the comparatively low rate of interest obtainable on funds belonging to the company. Expenditure at £4,255 is only fractionally higher, the net result being that a deficit of £1,666 for the year has been carried to the appropriation account, which now shows a credit balance of £46,830, and is more than represented by deposits at call and cash.

The more favourable developments of our immediate neighbour, the Durban Roodepoort Deep, Ltd., if maintained, should reawaken interest in the Roodepoort district, and as your extensive mining area lies on the direct dip of the ground of the company in question, there seems to be a greater likelihood that at some not too distant date it will be possible to formulate a scheme to exploit its potential value. Such scheme should, and probably would, involve amalgamation with the adjacent mining areas of other companies which are under the same technical and financial control as your company, thus constituting a mining proposition of such huge area as to be able to carry the heavy capital expenditure on shaft-sinking and development required to adequately open it up.

Sacke Estates and G.M. Co., Ltd.

SURPLUS SHOWN IN SPITE OF LOWER REVENUE.

Sir George Albu, presiding at the annual meeting of shareholders of the Sacke Estate and Mining Co., Ltd., held at the General Mining Building recently, said:—Gentlemen.—The revenue for the past year shows a substantial decline owing to the lower rate of interest which was obtainable on your funds during this period. The expenditure, althcugh slightly higher than in the previous year, was, however, well covered by the revenue, which showed a surplus of £787 after providing for depreciation on investments.

As noted on the balance-sheet, our stock and share holdings, valued at £15,127 11s., are taken at or under Stock Exchange closing prices at the end of the year. The individual holdings remain unchanged, and include shares and debentures in more or less dormant mines, the quotations for which, as mentioned at previous meetings, are therefore merely nominal, and do not necessarily reflect their intrinsic value.

Deposits at call and cash on hand totalled £49,954, as against £49,151 at the end of the previous year.

ENGINEERING SECTION.

Drill Steel; A Subject of Vast Importance to the Witwatersrand Mines.

ITS FORGING, HEAT TREATMENT AND TEMPERING.—SOME VALUABLE ILLUSTRATIONS.

By H. S. Brainerd.

I.

Mr. Brearley's highly valuable and instructive addresses on drill steel have served to focus attention on a technical aspect of the Witwatersrand Mining Industry which had too little attention given to it in the past; and with a view to keeping this important subject well in the foreground of local technical opinion we are now glad to be able to publish the full text, with photos, of an extremely interesting and important article entitled "Drill Steel: Its Forging, Heat Treatment and Tempering," by Mr. H. S. Brainerd, which appeared in our instructive and specialised American contemporary the "Compressed Air Magazine," November, 1922, and January, 1923. Extracts from the first article were published in our issue of December 23, 1922, but, in view of the topical importance of the subject, we now propose to reproduce the articles in full with the descriptive illustrations. Mr. Brainerd's contribution is a lengthy one and it will be reproduced in consecutive instalments. The first portion of the article is given hereunder:—

Steel is not a single element or compound, but a complex artificial product composed of many elements held in the solid mass as a mechanical mixture of alloys and chemical compounds with the element, iron. In ordinary steel the essential constitutents are iron and carbon. With these there are usually certain impurities such as phosphorus, sulphur and silicon which have not been entirely eliminated during the process of manufacture, as well as manganese—and perhaps other alloys such as nickel and chromium—which have been intentionally added for a definite purpose. All of these elements exert some influence in regard to the quality of the steel. Manganese present in an excessive amount causes the steel to harden intensively and renders it liable to crack in the hardening operation. It combines as a manganese sulphide with the sulphur, lessening the harmful influences of this element, which, in excessive quantities, forms iron sulphide and causes the steel to be "hot short" or to split and crack in forging. Steel with high phosphorus is very brittle; it makes steel "cold short" or extremely sensitive to failure by shock.

A good drill steel will have a carbon content of 0·80 to 0·90 per cent.; manganese from 0·15 to 0·30 per cent.; phosphorus and sulphur from 0·01 to 0·03 per cent.; and silicon from a trace to 0·30 per cent. It often happens that two drill steels, of practically identical analyses as far as ordinary elements are concerned, give such different service that we are forced to conclude that there are other factors than analysis which control ultimate quality. These factors are the method and the care taken in refining and the purity of the raw material.

Steel is composed of many individual crystals or grains of iron and of a carbide of iron built up in much the same way as is granite rock from the mineral feldspar, mica and quartz. These crystal constituents of steel are only visible with the aid of the microscope. When the steel is cast into ingots, the grains are comparatively very large, being later broken up into smaller grains by a combination of some mechanical work, such as forging, and a careful regulation of the forging temperature.

When a piece of steel is heated, the grains expand with increasing temperature similar to the usual expansion which bodies undergo when heated. When passing a certain temperature, called the critical temperature, the grains suffer an internal adjustment, and if cooled from this temperature, they will have at atmospheric temperature the smallest grain size possible for that steel. Upon heating the steel over the critical temperature, the grain size increases with the temperature up to a point where the grains are so large that we shall say the steel is overheated. Continued heating or long exposure to the furnace atmosphere at this temperature allows the gases to enter between the grains and to separate them. The steel is now burnt and fit only for scrap. Figure 1 shows a drill steel bit which has been burnt.

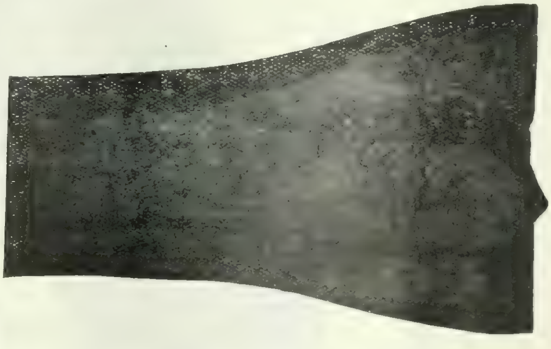


Fig. 1.—Result of long exposure to high temperature.

Steel becomes more plastic as the temperature increases, and, as a result, forging is usually carried on at a rather high temperature. The work or hammering which the steel receives reduces the grain size. The temperature at which forging stops is known as the finishing temperature. Above the critical temperature the hammering action causes the grains to flow over each other and the deformation or change in shape is caused by a change in the position of the grain. Hammering or forging below the critical temperature changes the shape of the grain itself and distorts it, setting up internal strains. The grains become harder and more brittle due to this cold work below the critical temperature and finally tiny checks or hair line cracks develop

Heating the steel for forging or hardening should be very carefully carried out. The atmosphere in the furnace should be controlled so that it is slightly reducing. If this precaution is neglected, or if the steels are exposed at a high temperature to an oxidising atmosphere, the carbon in the exterior combines with the oxygen and passes off as gas. This loss of carbon, called decarbonisation, renders the steel incapable of being hardened on the surface. Many complaints that steel will not harden may be traced to this cause. This may be discovered by getting into the surface with a sharp corner of a file; the steel will file readily but underneath the steel will be file hard.

When decarbonised bits are hardened and put into service the soft outside flattens out and the steels are returned to the blacksmith as being too soft. He may redress and reharden them at a much higher temperature but the same thing happens again and finally the steel is rejected as defective. The remedy is to use a reducing flame in the furnace. In an oil fire, the flame will be oxidising or cutting if an excess of air is used, and reducing if an excess of oil is used. The latter gives a black smoky flame. Fig. 2 (photographed through a microscope) shows a cross-section through the cutting edge of a bit. The metal which flattened out was decarbonised and the metal underneath this layer had hardened satisfactorily. Another remedy for this trouble is to file the decarbonised surface off each tooth after sharpening the steel and before hardening. Prevention is better than cure; and the steel should not be allowed to get into this condition.

The forming of drill steel bits and shanks requires that the steel be heated until it can be readily forged. High temperatures have a very injurious effect upon the steel. The following data was obtained in an effort to determine the relationship existing between the heating temperature used prior to sharpening "Jackhammer" drill steel bits and the drilling speed after the standard hardening treatment had been applied. Two bars of Ingersoll-Rand Swedish drill steel were made into standard "Jackhamer" steels, 24 inches long overall, with 1¼ inch gauge cross bits. One steel from each bar was then bitted at each end at the temperature shown in Fig. 3, the temperatures being measured with the Leeds & Northrup optical pyrometer. In no case was the temperature allowed to rise over that noted. The steels were bitted in a "Leyner" sharpener, type IR-50, and heated in a fuel-oil-fired furnace. The standard heat treatment, which consisted of heating the bits to 1440 degrees Fahrenheit, and quenching in brine, was then given the steels. The actual drilling test was made with a BCR 430 "Jackhammer," using 70 pounds air pressure on hard granite rock. The condition of the bits after testing and the total inches drilled in three minutes are shown in Fig. 3. The steels which had been forged at 2500 degrees Fahrenheit were run for only one minute. It will be seen that the most satisfactory forging temperature is 1900 degrees Fahrenheit.

In addition to the internal adjustment which takes place upon heating as the critical temperature is reached, the steel undergoes a sudden contraction and then again expands

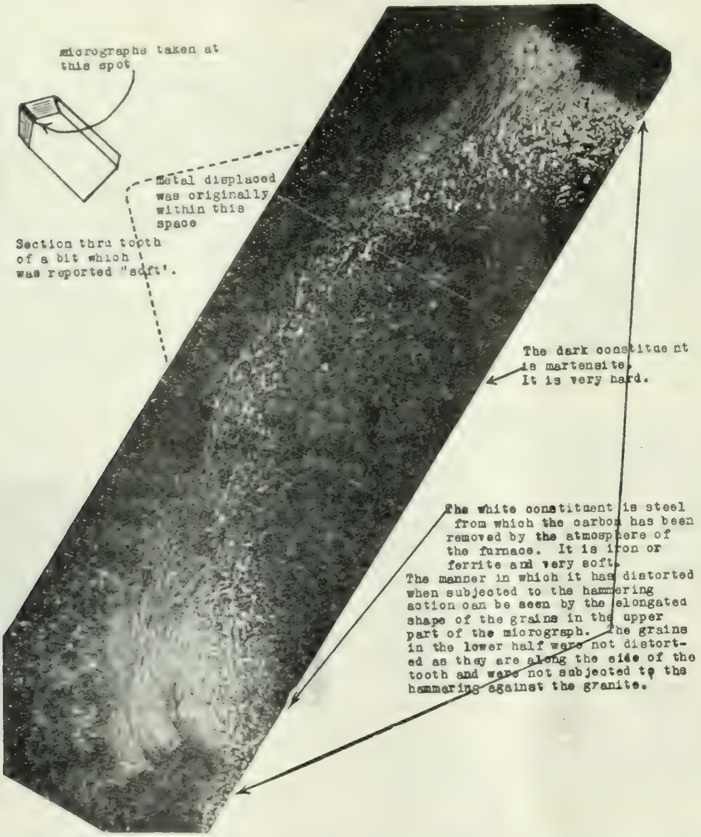

micrographs taken at this spot
Metal displaced was originally within this space
Section thru tooth of a bit which was reported "soft".
The dark constituent is martensite. It is very hard.
The white constituent is steel from which the carbon has been removed by the atmosphere of the furnace. It is iron or ferrite and very soft.
The manner in which it has distorted when subjected to the hammering action can be seen by the elongated shape of the grains in the upper part of the micrograph. The grains in the lower half were not distorted as they are along the side of the tooth and were not subjected to the hammering against the granite.

Fig. 2.—Micrograph of cross section through cutting edge of bit which had been decarbonised.

with increasing temperature. This fact forms the basis of one of the rules of heat treatment which is, *heat slowly and evenly.* If this rule is not adhered to, parts of the steel, especially the outside, thin corners, or projections, may be heated to the critical temperature before the interior of the part is very hot. The hotter parts will be shrinking while the cooler parts expand, and severe stresses may be set up which will possibly cause failure. Another good rule to follow when subjecting steel to heat treatment is to quench on a rising heat and not on a falling heat. The differences in volume previously mentioned are greater when the inside of the piece is hotter and consequently expanded more than the outside which is cooler. This difference causes more stresses to be set up when the part is quenched; and if the difference is very great it may cause breakage in the quenching operation. The steel may be stressed almost to the breaking point, and a little additional shock, such as the first few blows of service, will cause it to fail. The steel is then usually condemned as defective. Another reason for quenching on a rising heat is that the size of the grains is dependent upon the highest temperature of heating and not upon the temperature of quenching. If a part is heated to and quenched just above the critical temperature it will have a very fine grain size. If it is heated to a high temperature and allowed to cool slowly to just above the critical temperature, and quenched, it will have a coarse grain size corresponding to the high temperature. This condition is very undesirable.

A temperature is reached on heating and cooling steel which is called the critical temperature. At this temperature certain internal allotropic changes in state without a change in form changes occur that are indicated by an absorption on heating and an evolution on cooling of heat, a change in volume, and a change in magnetic properties. The change on cooling, or "Ar" critical point, occurs at a lower temperature than the change on heating, or "Ac" critical point, and cannot occur unless the piece has been heated beyond this "Ac" point. Drill steel of ·85 per cent carbon content has but one critical temperature for heating "Ac 1 2 3" and on cooling "Ar 3 2 1." The heating transformation occurs in a simple carbon steel without alloys at about 1340 to 1360 degrees Fahrenheit.

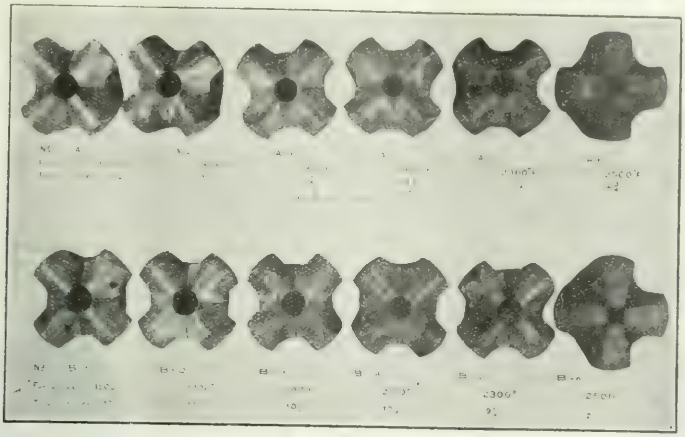


Fig. 3.—Effect of forging temperature upon drilling speed of steels having similar heat treatment.

A chart showing an actual determination, by the differential method, of the transformation points of Ingersoll Rand Swedish steel is illustrated in Fig. 4. The specimen from which this curve was made was hollow. A tiny platinum thermocouple was placed inside the hole and heated at a uniform rate in an electric furnace, the temperature being measured with a sensitive potentiometer. The evolutions and absorption of heat are shown by the deviation from a straight line of the heating and cooling curve.

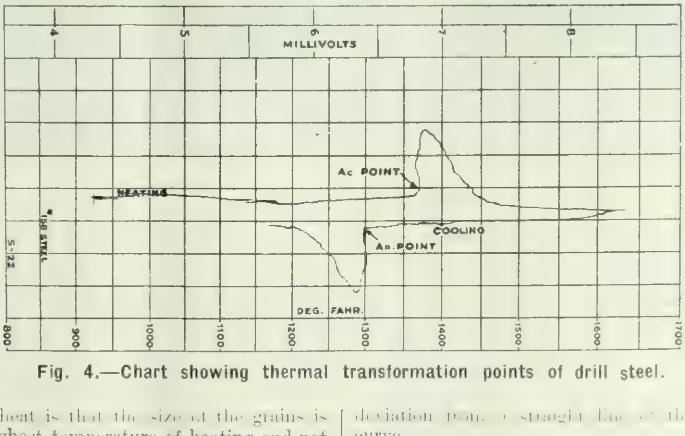


Fig. 4.—Chart showing thermal transformation points of drill steel.

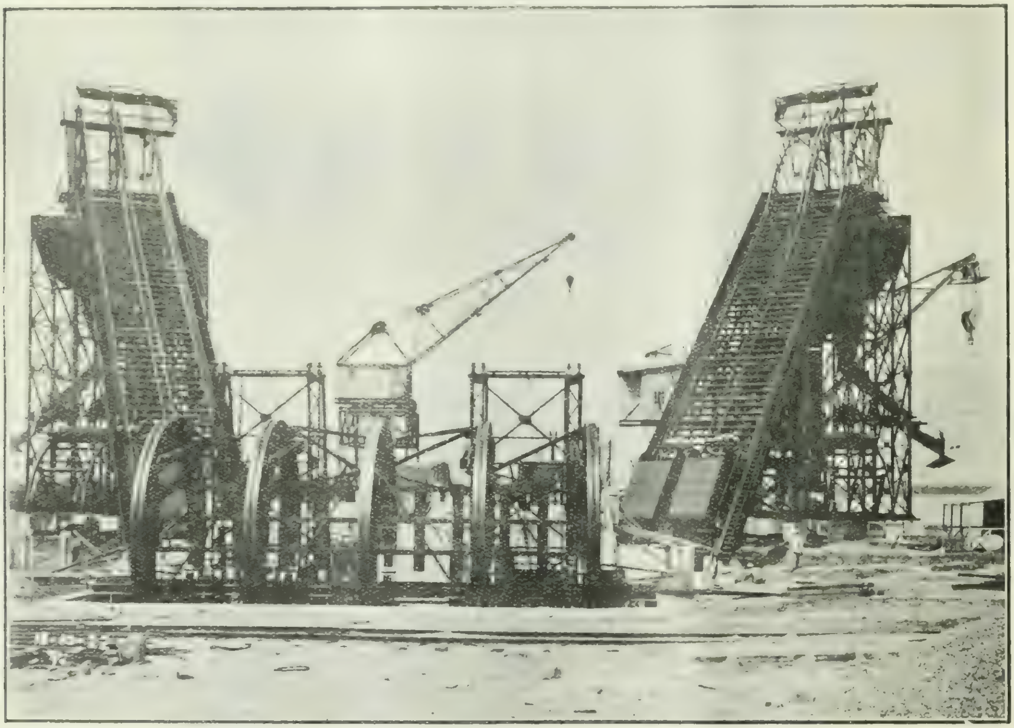
The microstructure of ·85 per cent carbon steel in the annealed condition is a soft constituent called pearlite. The components of pearlite at ordinary temperatures are alpha ferrite (iron) and an iron carbide called cementite. Upon heating, the alpha ferrite changes to gamma ferrite as the critical temperature is passed. The carbide dissolves in the gamma ferrite and forms a solid solution called austenite. The change from alpha to gamma ferrite is accompanied by an absorption of heat, a loss of magnetism and a change in volume.

(To be continued.)

The Delagoa Bay Coaling Plant.

FINE INSTALLATION ERECTED BY MESSRS. HEAD, WRIGHTSON & CO.—THE OFFICIAL TESTING.

The plant, which was described and illustrated in a recent issue of the "S.A. Mining Journal," was officially tested a few days ago. The Acting Governor-General of the Province of Mozambique, in the presence of members of the Harbour Board, personally inspected the several units of the plant and set them in operation. The entire plant was tested under coal and it is pleasing to record that every detail of the large installation worked smoothly and with entirely satisfactory results. The C.F.L.M. Administration, the contractors, Messrs. Head Wrightson & Co. (South Africa), Ltd., and all concerned in the design, manufacture and erection of this plant are to be congratulated upon the very satisfactory results obtained. We understand that the plant will now be put in regular commission for the coaling of vessels and thus becomes a valuable asset to the port and railways of Lourenço Marques and to the whole export coal trade of this country.



Delagoa's New Coaling Plant.

Is the Industrial Worker Paid Too Much?

The wages of the artisans and other European workers employed in the industrial centres of the Union are based to a large extent upon the theory that these wages must be sufficient to maintain a white man, his wife and three children at the standard of comfort which has come to be regarded as suitable for that particular class of the population. The depression in agriculture and the exceedingly small return which capital is obtaining on gold mining have raised the question whether those industrial workers are not obtaining too large a share of the wealth of the country. The point is the same as arose in Australia, where a Government Commission, having assessed the sum of £5 16s. 6d. as the wage necessary to maintain a working class family in a given standard of comfort, a demand was made that this decision be applied to the different classes of workers. It was then found that the entire wealth produced by Australia was not sufficient to provide this weekly income, although it has been enjoyed in the past by a number of organised tradesmen. The official figures of the production of the Union show that the total amount available to provide the livelihood of the European population of the Union does not exceed 120 millions per annum. The adult male European population is over 400,000, consequently the average amount that would be available to each European male adult in South Africa, if the total produced wealth were distributed equally over them all, would be less than £300 per annum. The mechanic, printer, and other industrial workers are being paid very much more than £300 per annum, while on the Rand mechanics on the mines have even demanded a 30 per cent. increase in their wages, which would bring their earnings to over £400 per annum. It is obvious from this that the farmers and the workers on the land generally are obtaining a very small proportion of the national production as compared with the industrial worker. It has been estimated that the average income of the agricultural section of the community is less than half that at present enjoyed by the mechanic

The Week in the Sharemarket.

CROWN MINES RECOVER—CITY DEEPS A FEATURE— SPRINGS MINES DEVELOPMENT—DIAMONDS LAGGING—THE ALBU MEETINGS.

Local prices throughout the week have maintained their recovery. Expansion was, however, somewhat checked by the absence of business from London owing to the holiday last Monday there, and also to things political being in the melting pot at present. At the same time it may be said that more speculative interest is evident. Corner House stocks were notable for the recovery of Crown Mines, of which much better things are still expected. City Deeps also were a feature, and the position disclosed by the chairman at the annual meeting warrants considerable confidence in this stock. Transvaal Gold Mining Estates have had some enquiry, and it is believed that this stock has now turned the corner. There are well founded rumours of better development and reports of increasing profits. The substantial assets of this company merit a better level for the shares. Barnato stocks featured the firmness of State Mines, for which there appears to be steady enquiry. Van Ryn Deeps continue to be well spoken of and a record tonnage may be expected this month. Randfonteins, which should also come away with big figures, have been picked up without pressure to buy. Of Union Corporation stocks, Modder Deeps have been well bought, and Gedulds, after early weakness, recovered on very little enquiry. General Mining stocks have been firm, without much change. The Anglo-American stocks are chiefly remarkable for the buying of Springs Mines by well informed people. The development at the No. 3 shaft is said to be good, which is a pleasant change from the last report of mediocre values from this section of the mine. Brakpans have rather been sold for speculative account from London. West Springs remained steady. Anglos have dipped slightly, also Consolidated Diamonds.

Diamonds have rather lagged. The Consolidated Diamond meeting appears to have been very satisfactory, but no definite announcement regarding dividends has rather discouraged shareholders. A closer consideration of the position of the company would entirely reassure holders, as it is evident that the dividend declaration, although not made now, is not far off, and the financial position is very sound. Crown Diamonds remained steady. West Ends, after some small bear selling, improved. New Transvaal Farms have begun operations on their own portion of their diamond farm, with, it is understood, good results.

Industrials are notable for the announcement that S.A. Alkali have now commenced to produce. Shareholders are anxious to see whether or not it is possible to sell the product at a commercial profit.

Banks and Loans have been a quiet market. There has been some enquiry for Rand Water Boards.

Throughout the week many annual meetings have been held, for the most part revealing positions satisfactory to shareholders. The remarks of Sir George Albu regarding further development of the West Rand have been specially interesting, and give promise that, under anything like fair economic conditions a progressive policy will be adopted there far beyond anything that has hitherto been thought of for that quarter of the Reef.

	Fri. 18th.	Sat. 19th.	Mon. 21st	Tues. 22nd.	Wed. 23rd.
Anglo American Corp.	24 3	24 5	24 6*	24 6	24 4*
Apex Mines	6 6*	6 6*	6 6*	6 9*	6 [illegible]
Aurora Wests	6 0*	6 0	6 0*	6 0*	6 0*
Brakpan Mines	66 0	66 6*	66 0*	66 6*	66 9
Brick and Potteries	—	—	[illegible]	—	—
British South Africa	—	12 6	12 [illegible]	—	12 0*
Bushveld Tins ...	[illegible]	[illegible] 3*	0 1*	[illegible]	[illegible]
Cinderella Cons.	—	[illegible] 0*	—		
City and Suburban	—	—	—	3 0+	3 0+
City Deeps	[illegible]	[illegible] 6	51 3	[illegible]	[illegible]
Clydesdale Collieries	—	17 3+	—	17 3+	—
Con. Diamonds ...	22 4½	22 3*	22 4½	22 6	22 [illegible]
Con. Langlaagtes	—	13 0*	—	13 3*	13 6*
Con. Main Reefs	9 0	9 1*	9 [illegible]	9 1*	9 4*
Coronation Collieries	27 0*	28 0	28 0*	29 0*	29 0*
Coronation Freeholds	0 4*	0 5*	—	0 6*	0 6*

	Fri. 18th.	Sat. 19th.	Mon. 21st.	Tues. 22nd.	Wed. 23rd.
[illegible] Syndicates	[illegible]	[illegible] 11	[illegible]	[illegible]	[illegible]
Crown Diamonds	[illegible]	[illegible]	[illegible]	[illegible] 4	[illegible]
Crown Mines	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Daggafontein Mines	[illegible]	[illegible]	[illegible]	3 1*	[illegible]
Durban Road. Deep	[illegible]	16 1*	[illegible]	16 [illegible]	16 [illegible]
East Rand Coals	[illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]
East Rand Deeps	[illegible]	[illegible]	[illegible]	[illegible] 7*	[illegible]
East Rand Mining	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
East Rand Props	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ferreira Deeps	[illegible]	[illegible]	—	7 [illegible]	—
Frank Smith Diamonds	[illegible] 6*	3 [illegible]	[illegible]	[illegible]	3 [illegible]
Geduld Props.	62 [illegible]	62 [illegible]	62 [illegible]	62 [illegible]	63 0
Glynn's Lydenburg		13 9	13 [illegible]	—	13 [illegible]
Government Areas	[illegible]	110 [illegible]	110 [illegible]	111 0	111 [illegible]
Hume Pipes		[illegible]	—	[illegible]	
Knight Centrals	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Lace Props	[illegible]	[illegible]	[illegible] 3	[illegible]	[illegible]
Langlaagte Estate	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Leeuwpoort Tin	2 [illegible]	2 [illegible]		[illegible]	[illegible]
Lydenburg Farms	2 [illegible]*	2 10*			
Meyer and Charltons	70 [illegible]	70 [illegible]			
Middelvlei Estate	1 [illegible]	1 [illegible]	[illegible]	1 [illegible]	[illegible]
Modder B.'s	21 [illegible]	21 [illegible]	—	21 7½	21 10
Modder Deep	[illegible]	[illegible]	[illegible]	13 9	13 [illegible]
Modder Easts	[illegible]	6 [illegible]	[illegible]	[illegible]	[illegible]
Natal Navigation Col.	27 [illegible]	27 [illegible]	27 [illegible]	27 [illegible]	27 [illegible]
National Banks	—		—	[illegible]	—
New Eland Diamond	11 [illegible]	11 [illegible]	11 [illegible]	[illegible]	[illegible]
New Era Cons.	[illegible]	6 [illegible]		[illegible]	[illegible]
New Geduld Deeps	[illegible]	—	—	—	—
New Kleinfonteins	[illegible]	4 [illegible]	[illegible]	[illegible]	4
New Modderfonteins	78 0	78 [illegible]	78 [illegible]	79 [illegible]	79 [illegible]
New Primrose	—	2 [illegible]	2 [illegible]	2 [illegible]	—
New Unifieds			1 0	—	—
New State Areas ...	35 [illegible]	35 [illegible]	36 [illegible]	36 [illegible]	35 [illegible]
Nigels	8 6*	—	—	—	—
Nourse Mines	14 [illegible]	14 [illegible]	14 [illegible]	14 [illegible]	14 6
Pretoria Cements	41 [illegible]	41 [illegible]	41 [illegible]	41 [illegible]	41 3*
Rand Collieries	—		[illegible]	1 0*	
Rand Nucleus		[illegible]	—	[illegible] 11*	0 11*
Randfontein Central	—			11 [illegible]	—
Randfontein Estates	19 9	[illegible]	[illegible]	20 3	20 3
Rouxville Diamonds	1 3*	[illegible]	[illegible]	1 2*	1 [illegible]
Roberts Victors	8 0+	7 [illegible]	8 [illegible]	7 [illegible]	7 [illegible]
Robinson Deep A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Robinson Deep B	10 10	11 [illegible]	11 1½	11 3	11 3
Rooibergs ...	3 [illegible]	—	—	—	3 [illegible]
Rose Deeps	[illegible]	9 [illegible]			
Sheba	[illegible]	[illegible]	[illegible]	3 0*	
Simmer and Jack	[illegible]	3 1	[illegible] 2	3 2	3 [illegible]
S.A. Breweries	[illegible]	[illegible]	[illegible]	32 0*	32 [illegible]
S.A. Lands		[illegible]	[illegible] 7	[illegible] 7*	5 9*
S.A. Reserve Bank	£[illegible]	£[illegible]	£[illegible]	£[illegible]	£13
Springs Mines	47 [illegible]	[illegible]	[illegible]	47 9*	49 0*
Sub Nigels	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
S.A. Alkali ...	13 6	[illegible]	[illegible]	[illegible]	[illegible]
S.A. Townships	[illegible]	[illegible]	[illegible]	10 9	11 [illegible]
Transvaal Lands	—	—	[illegible]	18 [illegible]	15 [illegible]
Transvaal G.M. Estates	15 [illegible]	15 [illegible]	[illegible]	1[illegible]	1[illegible]
Union 5 per cent	£[illegible]	£[illegible]	£[illegible]	£[illegible]	£101
Van Dyk ...	[illegible]	1 [illegible]	[illegible]	—	[illegible]
Van Ryn Deeps	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Village Deeps	12 [illegible]	12 [illegible]	13 0	12 9*	12 [illegible]
West Springs	19 [illegible]	1[illegible]	[illegible]	1[illegible] 6*	19 [illegible]
West Rand Cons.	—	—	—		
Western Rand Estates	—	[illegible]	[illegible]	[illegible]	[illegible]
Witbank Collieries	[illegible]	[illegible]	[illegible]	29 [illegible]	29 [illegible]
Witwatersrands	—	—	[illegible]	15 3*	15 [illegible]
Witwatersrand Deeps	[illegible]	[illegible]	[illegible]	15 3*	15 [illegible]
Zaaiplaats Tins	[illegible]	[illegible]	[illegible]	5 [illegible]	5 10

* Buyers + Sellers

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of the journal, or where the matter calls for special treatment will answer correspondents direct. All enquiries must be accompanied by a stamped and addressed envelope and in dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry

The Proposed Coy.'s Tax.

RUINATION OF THE TRANSVAAL FORESHADOWED—A CHORUS OF CONDEMNATION—MR. GEMMILL'S SCATHING INDICTMENT OF TAXATION GONE MAD.

That amazing institution, the Transvaal Provincial Council, has again thrust its way into the forefront of unpopular notoriety by its latest taxation impositions. The Companies' Tax proposals, intended by Dr. Reitz to "get at the big fellows," has raised a storm of protest, and it is clearly evident that the majority of the legislators who presume to further interfere in the affairs of this province are either so crassly stupid that they cannot foresee that a continuation of their insane methods will ultimately bring ruin to the Transvaal, or else they are so obsessed with an all-consuming hatred of any wealthy resident or employer or company with a stake in the country that they are unable to look at things from the angle of reason, and in their blind hatred of what they comprehensively term "Hoggenheimers" do not care tuppence if the Transvaal drifts back to the Republican days of penury. The Provincial Government some time ago refused financial assistance from the Union Government. The majority of its members prefer to "get at" the mining industry and the Rand. The Provincial Profits Tax, Poll Tax, Employers' Tax, and now the Companies' Tax have each and all been expressly aimed at the Rand, and if this sort of piratical legislation continues the Rand and "the big fellows" will decrease in prosperity and drag the Transvaal, and indeed the whole of the Union, into a quagmire of depression. Even Dr. Reitz himself has admitted "there are better taxes than that proposed." There certainly could scarcely be a worse conceived form of imposition.

A Letter from Mr. Christopherson.

In the daily Press Mr. Douglas Christopherson has dealt with the Companies' Tax in a short but very much to the point letter. Mr. Christopherson has said in this: "Dr. Reitz, in introducing his motion to tax companies, is reported to have said that in taxing the financial companies he wanted to get at 'the big fellows.' It may interest many to know that in the case at any rate of one of these financial companies 'the big fellow' which Dr. Reitz proposes to get at is represented by well over 20,000 individual shareholders, all of whom, except for a very small percentage, are resident overseas. Will such shareholders allow their money to be invested in a country where they are threatened with taxation as is proposed by such a body as the Transvaal Provincial Council, over and beyond taxation imposed by the Union Government; and moreover, threatened with an attempt to tax income received from their investments in Great Britain, America, Canada, and elsewhere outside of the Transvaal? There is plenty of demand and encouragement for capital to be employed in other countries outside South Africa. It will be interesting to hear how the other provinces within the Union view these proposals, in view of the fact that the financial houses in the Transvaal are frequently being asked for financial support to develop industrial and mining concerns in those provinces. Dr. Reitz's proposal will certainly not be helpful to them.—I am, etc., D. CHRISTOPHERSON.

The Gold Producers' Protest.

But the most scathing indictment of the proposed imposition has been forwarded by Mr. W. Gemmill, actuary and labour adviser of the Chamber of Mines and secretary of the Gold Producers' Committee of the Chamber of Mines, to the Administrator of the Transvaal Province. This letter is as follows: Sir,—"The mining financial corporations associated with the Chamber of Mines have learned with amazement, which will be shared by all who understand the conditions upon which the future prosperity of this country depends, the terms of the proposed tax on companies carrying on business in the Transvaal, and I am instructed to enter a vigorous protest on their behalf against these proposals. The corporations referred to have been responsible for raising most of the capital invested in the Witwatersrand gold mining industry, which is considerably over £100,000,000, and also much capital expended elsewhere in the Transvaal. Members of the Provincial Council may not be aware of the functions of financial corporations in the machinery of capital. If money is required for an oil venture in Venezuela, a ranching proposition in the Argentine, or a gold mine in the Transvaal, the owners of the proposition approach some financial house, usually in London or New York, to provide the necessary capital. But for those corporations, such enterprises would be greatly retarded, and many of them would not be financed at all. The focussing in financial corporations of capital available for new ventures is essential to rapid development, and is therefore of especial value to a young country. So important, indeed, are the functions of those corporations that Canada or Mexico, for example, welcome the prospect of financial houses interested in South African mines taking up interests in those countries. The Transvaal should be at least as eager to encourage capital to interest itself here, more especially in view of the undoubted fact that the gold mining industry has reached its zenith and is now on the decline. Unless money is available to open up other enterprises in the Transvaal, there will be nothing to take the place of the gold-mining industry, and the unemployment and distress which now exist will become chronic.

Detrimental to Capital.

"The taxation which it is proposed to impose on companies, and particularly on financial companies, will have a most unfortunate effect on the flow of capital to this country, and may even result in the withdrawal of capital at present invested here. The exceedingly high taxation in the Transvaal is already tending to force the financial corporations, which have in the past been almost exclusively South African, to direct their energies to other fields. It is common knowledge that taxation on financial interests in the Transvaal is far in excess of that in other young countries, or even in the United States. And the new Ordinance proposes not only still further to tax capital, but even to compel financial corporations who do business in the Transvaal to pay the tax on profits earned in other parts of the world. It is almost inconceivable that members of the Provincial Council can have realised that this is the effect of the Ordinance. Surely it cannot be seriously intended that a financial house having, say, 75 per cent. of its interests in other parts of the world and the remainder in the Transvaal, should be compelled to pay to the Transvaal Provincial revenue a tax on the profits it earns on that 75 per cent. No more direct deterrent to intending investors could be imagined. Not only is capital penalised by a special tax — over and above the already heavy Union income tax—on profits earned in the Transvaal, but financial corporations are apparently expected to make money in other parts of the world for the Transvaal Provincial Council! The Transvaal offices of these corporations have nothing at all to do with their interests in other countries; in many cases their Transvaal representatives do not even know what those interests are. On what possible grounds can the Provincial Council in equity attempt to tax those outside revenues?

Geduld East Lease Example.

"The effect of the regrettable hostility to capital which has been increasingly manifested of late years in the legislature of the Union and the Provincial Council of the Transvaal is already becoming visible. The Geduld East lease, if taken up, would have meant the expenditure in the development stage of nearly £2,000,000 in the Transvaal.

and, on the attainment of the milling stage, a very large annual expenditure for many years to come. No offers were made for the lease; but apparently the significance of that portent has been lost on the Provincial Council. If members would only realise the extent to which gold mining on the Witwatersrand will have contracted within the next seven or eight years, surely, instead of penalising capital, they would do everything thereby to encourage its inflow, and thereby secure that development which is so essential if employment is to be available for the rising generation. The propositions set out above are elementary to any student of economics or to any experienced business man; yet, to judge from the tone of the discussion on Dr. Reitz's resolution, there are members of the Provincial Council to whom they will come as a novelty. Are those members really unaware that large sums of money are urgently necessary for the further development of the Transvaal—a fact which public men of all parties have stated over and over again? Or do they suppose that the controllers of that money will be attracted to invest it in the Transvaal by constantly increasing legislation deliberately planned to penalise such investment? Capital will, of course, go where it can obtain the greatest security and the best return. Does the Provincial Council desire to demonstrate to the whole world that in the Transvaal there will be little security and the minimum return? A copy of this letter is being sent to the Press. I am, etc. (Signed) W. GEMMILL, Actuary and Labour Adviser."

Quarterly Reports.

SOUTH AFRICAN TOWNSHIPS GROUP.

FOR THE 3 MONTHS ENDED WITH MARCH 31, 1923.

South African Coal Estates (Witbank), Ltd.

Output, 143,838 tons; estimated profit, £10,974 0s. 2d. Landau Pit: Throughout the quarter work has proceeded satisfactorily. Underground conditions remain good and all machinery and plant ran very efficiently. Navigation Pit: Shortage of orders continues to affect the output from this pit. Conditions generally remain excellent and everything is in order for supplying a considerably increased output when required. Clewer Township: Improvement work has been continued steadily throughout the quarter.

West End Diamonds, Ltd.

Loads washed, 69,833 (roughly estimated 80 per cent. yellow and 20 per cent. overburden); yield, 5,662¼ carats, valued at £17,225; estimated profit, £5,010. The water supply was augmented during the quarter and in consequence it was found possible to wash more ground during the last few weeks of the period under review. Overburden is still being removed from the western portion of the mine. Development work is proceeding to open up the second level. The mine continues to open up well and the plant is running efficiently.

Rezende Mines, Ltd.

Main shaft sinking during the quarter, 44 feet. The development footage for the quarter amounted to 1,122 feet. Tonnage mined, 20,520; waste sorted, 11·30 per cent.; tonnage milled, 18,200; total yield (fine ounces) from mine, 8,994·60; working revenue from mine, £38,799 11s. 3d.; equal to 42s. 7·64d. per ton milled; from premium, £2,400, equal to 2s. 7·65d. per ton milled; working costs (including development redemption, £5,460, equal to 6s. per ton), £23,651 5s. 10d., equal to 25s. 11·88d. per ton milled; working profit, £17,548 5s. 5d., equal to 19s. 3.41d. per ton milled sundry revenue, £655 17s. 2d.; total profit, £18,204 2s. 7d. Capital expenditure during the quarter amounted to £1,742 5s. 0d. excluding development. The number of natives under engagement at the end of the quarter was 1,107. Developments continue excellent

Leeuwpoort Tin Mines.

During the quarter 1,730 tons of ore were milled, resulting in the recovery of 16 tons concentrates of an average grade of 60 per cent. In view of the recent rise in the price of tin, steps have been taken to restart normal operations.

McCreedy Tins (Swaziland).

Operations were restarted at the end of March and it is anticipated that production of tin on the former basis will commence before the end of April.

TRANSVAAL SILVER & BASE METALS, LTD.

Report for the three months ended April 30th, 1923.

Ore treated, 15,745 tons of 2,000 lbs.; output, 1,281·29 long tons silver lead bullion. Estimated gross revenue from silver lead bullion produced, £50,906 1s.; per ton, based on tonnage treated, 64·66s. Less estimated shipping and realisation charges, £9,341 18s. 1d.; per ton, 11·86s. Totals, £41,564 2s. 11d.; 52·80s. Working costs, £25,115 15s. 1d.; per ton, 31·90s. Estimated working profit, £16,448 7s. 10d. per ton, 20·90s. Sundry revenue, £144 4s. 5d.; per ton, 0·18s. Estimated profit for the three months, £16,592 12s 3d.; per ton, 21·08.

The total cost of current development is included in working costs.

The expenditure on capital account for the period amounted to £1,342 5s. 7d., representing the cost of shaft sinking at No. 1 shaft. This shaft was sunk 113 feet to a total depth of 196 feet from the surface.

The development footage accomplished during the three months was 1,160 feet. The footage sampled totalled 770 feet, and gave the following results:—

Payable.—365 feet, averaging 12·8 per cent. lead and 12·8 ozs. silver per ton of ore over 38 inches.

Unpayable.—405 feet, averaging 2·1 per cent. lead and 2·0 ozs. silver over 31 inches.

SOUTH-WEST DIAMONDS (1920), LIMITED.

The Secretaries report operations for the month of April as follows:—Cubic metres mined, 1,170; Cubic metres treated after sifting, 177; number of stones, 1,163; carats won, 207.

Employment for Phthisical Men.

One of the minor organisations of the mining industry of the Transvaal, of which comparatively little is known, but which is a most valuable establishment, is known as the Silicotic Employment Office. This office was established by the Chamber of Mines and is operated under the ægis of the Asociation of Mine Managers of the Transvaal, and inasmuch as the good work which has been done by this organisation since its inception does not appear to be generally appreciated, it may be worth while to briefly state the results secured by the office since its establishment in October, 1916. From that date and up to the end of March, 1923, work had been obtained by the office for no less than 2,543 men and in all 3,309 jobs had been found for them. A special function of the Silicotic Employment Office is to endeavour to obtain work for Witwatersrand mine employees who have been found to be suffering in one stage or another from phthisis, and are prohibited from performing further underground work on the Rand. The class of job for which these men are suitable is generally on surface or in the outlying gold or base metal mines of the Transvaal, or on the coal fields, and it will be evident from the foregoing that the Silicotic Employment Office has laboured, in the interests of these phthisical rejects of the gold mining industry, to their very great advantage.

Liquid Oxygen in Mining[*]—III.

By Alfred James, M.I.M.M.

European Practice.

Compared with the [illegible] practice described above, European practice tends to the suppression of [illegible] by those containing but little carbon. Greater shattering power is developed, the atmosphere after a blast is very much clearer and agreeable and more rapidly accessible, and there is no appreciable production of carbonic acid. Detonators too are not used, the notched end of the fuse without a cap is merely inserted into the cartridge and the fuse is then fired in the ordinary way. The length of the fuse is calculated on that actually tamped hard and the portion outside the hole beyond the radius at the collar, in other words, that portion freely exposed to the escaping oxygen is disregarded. Blasting takes place under water as freely and as easily as in dry holes. Tamping is [illegible]: cartridges are made of permeable mine dust or salt, and these are rammed (well pushed) in with a wooden rammer. No precautions, vents or the like, other than not pressing the first wad of tamping too close to the liquid oxygen cartridge, are taken to prevent the blowing out of the tamping by gas prior to the explosion: this simply does not happen owing to the permeability of the tamping material. On the other hand, too hard ramming may cause an accident through premature explosion. When holes are blasted under water, tamping is unnecessary.

The non-use of detonators makes the European practice less costly and the atmosphere less toxic.

The cartridges appear to have more "staying" power than the [illegible] variety, and are stated to have a time limit of 30 minutes, the greater period of availability being partly due to the slightly greater diameter commonly adopted—38 mm.

At the great tunnel of the Rove (Marseilles) it is stated that the results show liquid oxygen to be 3.6 times cheaper than dynamite for underground work and 4.39 times cheaper in the quarrying work. At Uckange (Moselle) they find that 1.13 lit. (practically kilos) of liquid oxygen have an efficiency equal to 1 kg. of black powder. At the iron mines [illegible], where about 7,000,000 tons of ore are produced yearly by liquid oxygen, very high economies are claimed. They show an extraction of ore from the galleries without the use of detonators or of any dynamite or powder, at a cost of 0.179 fc. per ton by liquid oxygen; 1.757 fc. by the use of cheddite, and 1.252 fc. by the use of compressed powder. The output per miner per day is 9.411 tons in galleries and 11.291 tons from working faces by liquid oxygen; 6.962 tons from galleries, 8.425 tons from working face by cheddite; 8.639 tons from galleries and 8.931 tons from working faces by compressed powder. In their quarrying they state an expense per ton of 0.0925 fc. by liquid oxygen and 0.407 fc. by dynamite; the latter method is thus 4.4 times dearer.

The above figures I consider biassed, but they would appear to amply justify the statement of my own observation in practice of a cost by liquid air only 65 per cent. of that of dynamite 40 per cent. gelignite at 12[illegible] per lb.

I must, however, in pointing out these advantages, impress the warning given me by the head of the explosive industry on the Continent: "The success of a liquid air installation is mainly dependent on the quality of the technical supervision available."

Accidents.

It would seem at first sight that, with a material inert until immersed, and used immediately after immersion, again becoming inert in half an hour unless exploded in the interval, there is but little room for accident, the more so as spontaneous combustion is unknown.

Yet grave accidents have happened. Fortunately, with increased understanding and investigation, accidents have become still fewer, so few indeed, as to be almost incredible. In the Moselle district there were four accident cases only for the whole of the year 1920, for the extraction of 5,500,000 tons of ore. Of these "accidents" two were "burnings" from splashed liquid, and two were from premature returns to the working face. The "burnings" are not serious; a finger or hand may have to be wrapped up for a week or two, but including these cases it means

1 accident per 1,361,000 tons.

In the mines where powder or dynamite is still used the accidents were 18, of which 14 were from burns resulting from contact of powder and naked flame, three from premature returns to the working face, and one from premature explosion. The total output was 2,600,000 tons,

or 1 accident per 145,000 tons,

or nearly ten times more accidents with powder than with liquid oxygen.

In 1921 there were two serious premature explosions with liquid oxygen which killed two men and gravely injured one other. The first explosion was caused by reloading a "cannon" (blown-out) shot, the second one during tamping. The total accident cases were five burnings or splashings, one burning from an immersed cartridge coming into contact with a flame, and seven from the premature explosions above mentioned, total 13; of which two were mortal and two grave.

Averaging the total cases for the three years 1919, 1920, 1921, we get:—

Total production by liquid oxygen...	15,500,000	tons of ore
Total production by other explosives	7,500,000	,, ,,
Liquid Oxygen ... one accident per	770,000	tons
Other explosives ... one accident per	187,000	,,

It might be considered fairer, however, as we take no account of the accidents occurring during the actual manufacture of the dynamite or powder, to deduct from the above total the accidents due to "splashings" prior to the actual manufacture and immersion of the live cartridge. These amount for the three years to ten in number. Deducting the figure from the total reckoned above, we find

16 accidents in the three years, or roughly,
one accident per 1,600,000 tons of ore.

As, however, the accidents in the manufacture of dynamite do not affect the mine staff, whereas splashings do, I prefer to allow the original figures to stand.

It is found to be a grave source of accident to recharge a "cannoned" misfired hole without cleaning it out and inserting a plug of fat clay—there may be a smouldering wad or the like still in the hole to explode the next charge. It is always necessary to have the end of the fuse projecting some distance away from the vent of the hole, and to regard as useless, for timing purposes, that portion of the fuse of which the exterior is freely exposed to the issuing stream of gaseous oxygen—the coat takes fire. But outside the hole, and when tamped properly inside the hole, the fuse burns regularly with a not greater than 7 per cent. acceleration.

(*To be continued.*)

Owing to pressure on space the annual meeting of the Union Corporation is held over until next week.

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[*] From Paper read before the Institution of M. and Metallurgy.

The Utilitarian Value of Geological Investigation, Illustrated by the Geology of South African Coals-IV

Anniversary Address by the President, C. J. Gray, A.R.S.M., read at the Annual Meeting of the Geological Society of South Africa.

Though no lower series of seams has been found with which the composition of the coal can be compared. I may draw attention to the coal on the farm Vangheining No. 1724, situated about (?) miles west of Warmbaths. That seam is probably the most recent known in South Africa. It is a composite seam 27ft. thick in all. Much of it is shale or intermixed coal and shale. For eight samples taken from definite coal bands totalling 13 feet 10 inches analyses showed ash from 13 to 31, mean 21·2 per cent., and fuel rations from 0·65 to 1·3, mean 0·84.

It will be seen that the coal is more bituminous than even that in the upper Grootgeluk or Umlalazi seams, or the coal in a Stormberg seam, associated with oil shale, which outcrops near the head works of the Umkomanzi River in Natal, which has a fuel ratio of 1·2.

Let us turn to another division of my subject, which will I think illustrate the fact that geological investigation with regard to such matters as the topography of ancient land surfaces, the uplift and subsiding of those lands, the changes of their climates and floras, and the mountain building movements of the past, should have practical value for guidance in mineral prospecting and development in the present. I say "should have" for my study has shown me how difficult it is to gather such a clear and consistent idea of the conditions under which our coal seams were formed as is necessary.

On the map of South Africa we find coalfields distributed over the eastern portion of the Union, but none in the western portion. Unless theories with regard to coal formation are far wrong, we owe the coal seams to the fortunate circumstance that, when in changing climatic conditions those periods suitable for the growth of coal vegetation were passed through, there was land, and much of it low lying and flat, gradually subsiding in and near that portion of Gondwanaland which is now Eastern South Africa.

Even now our knowledge of the geological age of the coal seams may be incomplete, but it appears that in four different ages the conditions were suitable for coal formation, and that, therefore, we have seams or sets of seams in the Middle Ecca, the Lower Beaufort, the Molteno beds of the Stormberg, and in the Transvaal Bushveld sandstones and marls which probably correspond with the cave sandstone and red beds of the Stormberg series.

Let us consider the Middle Ecca seams first. They are by far the most important economically, as they include the seams worked in Natal, and on the Witbank, Springs and South Rand fields in the Transvaal, and also those at Vereeniging and Vierfontein in the Orange Free State. The conditions under which they were formed in the Transvaal have been referred to by Mellor, Du Toit and Wybergh. Du Toit, in his paper on the "Carboniferous Glaciation of South Africa," referred to the subsidence of the land in the north-east, so that it became covered by those deltaic deposits which form the Transvaal coal measures, while Wybergh in his Memoir, issued during the past year, on the "Coal Resources of the Union of South Africa," has described how the lower seams at Witbank were in proximity to an ancient land surface rising above the level of the coal swamps which extended unbroken from great distances to the south. Whether we accept Mellor and Wybergh's views against detrital origins for the coal, or Steart's view in its favour, or partly one view and partly the other, it is hard to believe that the vegetable matter grew or was deposited, so evenly as we find it, at any great distance from dry land. There is, however, some difficulty in realising how the coal in Natal, say near Dundee, could have been formed near land, as the seams are many hundreds of feet above any pre-Karroo rock known to occur within a radius of many miles. It is just possible that pre-Karroo rocks at a high level are hidden to the westward below rocks more recent than the Lower Ecca, or perhaps more probably subsidence was not uniform and the Ecca sediments themselves formed land surfaces of low relief from time to time. In the Transvaal, where we have areas of older rocks at greater elevation than the Ecca seams, we can picture the coal swamps extending round the flanks of the hills and filling valleys and basins. Possibly the differences between Natal and Transvaal coals may be due to the latter being formed nearer relatively high ground from which water or wind would carry and deposit sediment, but on the other hand Wybergh sees evidence of advantage in such proximity, for he writes: "It is possible that the greater thickness of good steam coal near Witbank may be due to the greater altitude and dryer character of the land surface during the accumulation of coal-forming material, permitting a growth of greater luxuriance and longer duration than elsewhere in the flat and low-lying portions of the terrain lying farther south."

If we look into the question of the place of origin of the sediments, in which the Transvaal and Natal Ecca coals are interbedded, we find some difficulty. The sediments consist largely of felspathic coarse grained sandstones, so that a distant origin seems unlikely. The most obvious place of origin would be the land close at hand, but, according to both Du Toit and Steart, that cannot be the origin of the Natal sediments. Steart states: "The sandstones and grits are always false-bedded, indicating deposition in shallow water by strong currents, which apparently brought the sediment from an easterly source," while Du Toit says: "An important point is the universal false-bedded nature of the grits, the dip of the planes being regular over a great area directed west or south-west, indicating for the sediments a source lying within what is now the Indian Ocean."

In considering the origin of the Middle Ecca or Coal Measure sediments, we should not overlook such guidance as is given by the underlying rocks. On the Klip River coalfield and south of it in Natal, the "Coal Measures" are underlain by a great thickness of black shale—the Lower Ecca Beds—separating them from the Dwyka. It seems as though that shale represents mud, perhaps derived from the melting of ice remaining after the Dwyka age, deposited in water till it had accumulated so as to form a level floor on which, with change of climate and the freeing of the land from ice, the coal measure sediments began to deposit. As subsidence continued the sediments would extend farther and farther northward, till the surface was prepared for growth of the coal vegetation, which perhaps extended in great continuous areas not only above the Lower Ecca deposits, but also over regions where the Lower Ecca never had been deposited, till it reached the hills of older rocks in the Central Transvaal.

(To be continued.)

Globe & Phoenix.

The output of the Globe and Phoenix Gold Mining Co., Ltd., for the month of April was: Mill.—Tons milled, 6,297 tons; yield, 4,571·69 ozs. Slimes.—Tons treated, 2,342; yield, 281·50 ozs. Sands.—Tons treated, 9,585; yield, 1,140·24 ozs.; total value, £25,184 7s. 9d.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

SLIGHTLY BETTER BUSINESS TENDENCY—PROPOSED TAXATION STILL FESTERING—IRON AND STEEL: HERE AND ELSEWHERE—TIMBER AND BUILDING MATERIALS—NEED FOR GERMANY'S RESTORATION TO NORMAL INDUSTRIAL ACTIVITY KEENLY FELT.

General.

Commercial circles report no improvement in general business conditions this week in Johannesburg, and that the country districts are distinctly quiet, pending the realisation of crops now imminent. Hopes are high that when the mealie crop is marketed much-needed money will be put in circulation in the agricultural centres, which will, in part, at any rate, eventually gravitate towards the Rand. Money is still very tight here, its scarcity hampering business materially. Local firms are exercising the utmost caution in regard to indenting of goods, which may, in the opinion of influential commercialists, eventually create a shortage of stocks here. Meanwhile prices remain very firm on the other side, and the competitive rates now ruling locally are consistent with replacement values. As is usual at this time of the month, business on the Commercial Exchange is rather slow. An important merchant this week said that, strange to say, German goods were still coming in. An encouraging sign for local merchants is the recurrence of orders on a fairly large scale from Rhodesia in respect of the mines there.

In conversation with important commercial people this week it was ascertained that there still remains a nasty feeling here regarding the new taxation proposals, which are, indeed, causing uneasiness among certain houses, and it is hoped that pressure may be brought to bear on the Provincial Council to abate their ill-timed demands. In the opinion of the commercial world, such action is thought to be very ill-advised at the present juncture, and to be fruitful of evil to the community. Should such proposed measures become operative, commercial circles see no hope of fresh capital being diverted to the Union, for which we are presently languishing and of which we require a good deal to develop our mining and industrial enterprises. To bring forward such taxation at this moment is, in the opinion of Rand commercial circles, not only iniquitous, but downright suicidal to the Union's future. What the Union wants, and wants badly, is capital to help it out of the present rut. Possibly no other country on earth offers better security on capital advanced than the Union of South Africa, and to [illegible] by such crass taxation now, when the whole country is gasping for fresh air in the shape of capital to develop its almost illimitable resources, is, in the view of most people, killing the goose laying the golden eggs.

There appears to be abroad to-day a more hopeful feeling than has been apparent for some time that some sort of settlement may shortly be arrived at between the Powers and Germany in regard to the vexed reparations question. Should such an arrangement be made, some of the capital involved in such a settlement is bound to find its way to South Africa, and, provided the Provincial Council is not allowed to go to extremes in the way of taxation, capitalists overseas may see security for advances in our undoubted potential wealth. At any rate, our mining industry has during the past twelve months proved what it is capable of during normal conditions, and should no absurd and killing imposts be added to our present burdens, we should certainly eventually come out all right. In the opinion of many far-seeing men here, lack of capital is the only handicap we are suffering from to enable this country to develop and expand her mining resources, and to assume that industrial position which her resources entitle her to expect. It is much to be hoped that no foolhardy policy on the part of our legislators will be allowed to upset such well founded aspirations.

Stress was laid this week by a very responsible commercialist on Germany's getting back to work again. He thought it was a very big mistake on the part of other nations to attempt to smash her. France had proved this up to the hilt. Germany was a very big purchaser of the world's raw materials, and when and should she agree to a settlement of her obligations and settle down to business again in earnest it would be a capital thing for the world—to see her paying her just debts, and at the same time stimulating the trade of the world, as she had heretofore done. The idea of squashing Germany was, he said, fallacious, and nothing but benefit could accrue to the world from seeing her once more in harness, gradually paying off debts and assisting the world's trade. When that occurred it would undoubtedly be to the good of everybody.

Nothing succeeds like success! The rapid rise of Mr. Stanley Baldwin in the political world since 1906, culminating in his assumption of Mr. Bonar Law's Premiership mantle is very favourably commented upon in Rand commercial circles, and hopes are freely expressed that we may shortly see a "getting into the ring" instead of "sitting on the fence" policy pursued by Britain in respect of the vexed German reparations question. The utmost sympathy goes out to the passing Minister in his present trouble, and the universal tributes which have been made to his sagacity and skill under very trying circumstances must be very gratifying to him just now.

Engineering shops report very fair activity, and are now busy tendering for very important contracts. Altogether, they are busier now than they have been for some time past.

Prices are, with one or two exceptions, much about the same, notwithstanding recent increases at Home.

Iron & Steel.

The past week has been rather quiet on the Commercial Exchange and outside, but some merchants report a fair number of inquiries. Steel plates are quietly firm, and when present stocks are all consumed there is likely to be a shortage, as merchants are not likely to import at the present high price of plates at home compared with the ruling local selling price here. Quarter round iron and steel is almost unobtainable; price is about 30s. per 100 lbs.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, $\frac{1}{8}$, 3-16 and $\frac{1}{4}$ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, $\frac{3}{8}$ up to $\frac{3}{4}$, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; $\frac{7}{8}$ and 1in., 25s., cheques plates, 27s. 100; lb.; imported flats, $\frac{1}{2}$ x 3-16, $\frac{5}{8}$ x $\frac{1}{4}$, 30s. per 100 lb.; $\frac{3}{4}$ x $\frac{3}{8}$, $\frac{3}{4}$ x $\frac{1}{2}$ and $\frac{7}{8}$ flats, 27s. 6d.; $1\frac{1}{2}$ to $2\frac{1}{2}$ flats, 25s.; larger sizes, 24s. 6d.; square iron, $\frac{3}{8}$, 27s. 6d.; larger sizes up to 4 in., 25s.; $\frac{1}{2}$ round iron, 26s. to 27s. 6d.; round iron, $\frac{1}{4}$ in. and 5-16, 28s. 6d.; $\frac{3}{8}$, 7-16 and $\frac{1}{2}$ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, $\frac{1}{4}$ and 5-16, 28s. 6d.; $\frac{3}{8}$ and 7-16, 26s.; $\frac{1}{2}$ in., $\frac{5}{8}$ and $\frac{3}{4}$, 25s.; $\frac{7}{8}$ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, $\frac{3}{4}$, $\frac{7}{8}$ and 1 in. x $\frac{1}{8}$, 30s. per 100 lb.; $1\frac{1}{2}$ up to 4 in., 23s. 6d.;

5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag) is very scarce, at times unobtainable, merchants waiting for shipments to arrive, price about 2s. 8d. per lb. Phosphor tin, 2s. 10d. per lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 60s. and upwards; barbed wire, "Shortthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Union Steel Corporation (S.A.), Ltd.

This important local industry reports this week "full up," which requires no further comment. *Floreat* Vereeniging!

Second-Hand Machinery.

The second-hand machinery market, said a leading dealer this week, appears to be bucking up again in spite of scarcity of material. He had, he said, at present an order for two 250 h.p. boilers, which he is having very great difficulty in obtaining in Johannesburg proper. Several big orders, he said, had come in from Rhodesia from the several big mines up there, and there appears to be a little difficulty in fulfilling all their requirements. He anticipated a bigger revival when more material was at the disposal of second-hand machinery dealers, which was anticipated from the closing down of one or two moribund mines. Dealers, without exception, hoped that the E.R.P.M. would not be among that category, because as far as that goes the closing down of these mines naturally tends to throw many miners out of work and upon the charity of the country, when everybody has to put his hand in his pocket to keep them going. Dealers would of course prefer to see everybody working, which is not only good for trade but creates a better spirit. There is a big scarcity of piping of the larger sizes, and several companies with large quantities for sale are now holding on. Second-hand pumps of the larger kind for high lifts are very scarce, the majority of those held by the defunct mines are very scarce. Generally things appear to be better, and it is much hoped that the betterment will continue.

Newcastle Iron & Steel Co., Ltd.

The requisite meeting of share and debenture holders in the Company was held during the week, when all expressed themselves in favour of the new scheme of amalgamation with the Pretoria Iron & Steel Works, Ltd., and all resolutions to that effect were unanimously passed. A special tribute was paid to the untiring efforts on the part of Mr. J. K. Eaton, the founder of the Newcastle Iron & Steel concern to bring this important local industry to fruition.

British Iron and Steel Outlook.

We are indebted to a leading iron and steel importer for the following extracts from a report from one of the biggest iron and steel concerns in England

We think you may be interested to have a short review of the iron and steel trade in this country as it appears to us. Up to the end of last year the steel trade here was working on a very much reduced scale of output, and relying, as far as raw materials are concerned, largely on scrap, also on semi-finished material imported principally from France. On this basis a very slow and gradual improvement was being experienced, but the trade continued extremely depressed. Blast furnaces in blast were much reduced in number, and the output of steel very difficult of sale. At the end of the year four things happened to create a radical change. (1) The scrap price rose particularly in export to Germany, thus throwing a larger demand on pig iron and imported material; (2) The occupation of the Ruhr upset the whole of Franco—German arrangements for the production of steel, and thereby reduced the amount of semi-finished material available in this country from France; (3) The same upheaval hindered the execution of many orders then in the hands of German and French merchants; (4) The home demands in material at this time became so strong that very little material was available from that quarter, nor was any to be obtained from the U.S.A., which have recently been heavy buyers of pig iron and semi-finished material from this country. The result of all this has been constant pressure of work in the iron and steel work in this country. This induced a certain demand for pig iron beyond the capacity of furnaces then in blast, and it was then found that the furnaces, although willing to work, could not do so because there was a definite shortage of coke in this country, accentuated by the huge demands of export of coke to France, to make up for the amount which they had ceased to receive from Germany as the result of the French action in the Ruhr. In this respect France has been making desperate efforts to counteract the effects of the Ruhr occupation, and has been paying very high prices for coke and have been receiving about somewhat one-fifth supply of their requirements. The consequence of this has been that the very welcome expansion of trade in this country has been to some extent checked by the difficulty in securing raw materials, and the result has been a strong upward trend in prices. Most sections of trade have been fully occupied to the extent of their capacities based on the raw materials available, which position is likely to continue, the prominent factor being the supply of raw materials in competition with the demand from France. We look forward to a continuation of a strong market and possibly a further upward movement in prices, and our view is that it will be many months before conditions can be brought back to such an order as will restore a normal output there. Consequently we anticipate a continued heavy demand on the resources of this country, and we do not look for any decline of prices in the near future.

World Conditions—Mail Advices—Britain—The Outlook.

The iron and steel markets have been almost featureless this week. Business generally has been quiet, and although the industy on a whole is busy, and has still plenty of orders on its books, in one or two departments the need for new business is beginning to be felt. Undoubtedly the chief check upon business is the belief that the Rhur trouble may be finished at a not distant date, and that large quantities of material will then be available for export from the Con-them. It is suggested that large quantities of steel material are being accumulated at the German works ready for this eventuality. On the other hand, emphatic denial of the accumulation of iron and steel in any Continental country have been made by interests which should be in a position to know the real position.

Oils and Paints.

Motor spirit, 1s. 7d. to 2s. 2d. in cans; linseed oils, raw, 4s. 8d., boiled, 4s. 10d.; gas engine oil, 2s. 7d.; machine oil 2s.; castor (pure), 4s. 10d.; paraffin, 1s. to 1s. 2d. per gallon; paints in 5 cwt. lots, [illegible]; red lead, 42s.; white lead, 47s. to 54s. 9d.; zinc oxide, [illegible] to 50s. per cwt.; turpentine, 9s. 7d. to 9s. 9d.

Quotations.

Staffordshire common bars, 14s. 5d.; galvanised corrugated sheets, 28s. per cwt.

Tinplates.

The base price, 20 by 14, is 25s. f.o.b.

Galvanised Sheets.

Works are quoting £19 10s. f.o.b. for 24 gauge corrugated sheets in bundles.

Wire. Nails and Sheets.

Galvanised wire in 4 cwt. lots, fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7lb. rings, 8 gauge base, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 21s. per cwt.; cut steel nails, 3in. to 6in. clasp, in 2-ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 24s. per cwt.; flat steel sheets, 26s. per cwt.; black, 21s. per cwt. Bolts and nuts, 50 per cent. discount.

Quotations.

Pig iron.—Cleveland, Foundry No. 1, 130s.; No. 3, 127s. 6d.; No. 4 forge,. 120s.; mottled, 120s.; hematite, mixed Nos., 125s. Finished iron and steel.—Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £10; hard, £10 15s.; bars and angles, £10; tees, £11; joists and channels, £10 5s.; sheets, singles, £11 10s.; doubles, £15; lattens, £15 15s.; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

At the weekly meeting of the London Iron and Steel Exchange this week, business was light and it was reported that inquiry for export markets had improved. Buyers' price limits, however, were generally too low for business.

Pig Iron.

Prices of British pig iron have been well maintained, but little iron is available for delivery before June. Basic and most descriptions of No. 3 foundry are quoted at £6 5s. furnaces; but there is a marked disinclination on the part of consumers to enter into commitments at that figure. Continental iron has been offered at prices ranging from £6 10s. to £7 f.o.b., but no business has resulted.

Semi-Finished Material.

There is still a good demand for billets and sheet bars, and some makers are quoting £9 15s. to £10 for 2 to 4in. billets. It is reported that Belgian wire rods have been offered at £11 10s. French wire rods have been sold at £11 15s. to £12 f.o.b.

Finished Materials.

It is reported that Belgian steel bars have been offered at as low as £9 f.o.b., but most Continental works are asking £9 5s. to £9 10s. Belgian and German plates, ¼in and 3/16in. have been offered at £9 f.o.b., and sheets ⅛in and 1/16in. have been quoted at £10.

British Production.

The output of pig iron in March amounted to 633,600 tons, the highest monthly production obtained since January, 1921 (when it was 642,100 tons). The furnaces in blast at the end of the month numbered 202, an increase of 13 during the month. The production includes 206,300 tons of hematite, 204,600 tons of basic, 144,700 tons of foundry, and 45,900 tons of forge pig iron. The output of steel ingots and castings in March amounted to 820,500 tons, which is the highest since September, 1920, when the production amounted to 884,700 tons.

Cleveland Ironstone Miners.

The immediate effect of the reversion to an eight-hour day has been a resumption of work in several mines that had been closed down.

Wages Reductions.

Wages reductions in March affected the following workers: semi-skilled men and labourers in steel melting shops generally and in puddling forges and rolling mills in the North of England; ship repairers on the Mersey; ship builders at Belfast; electric cable makers; and heating and domestic engineers.

America.

The steel works operations are slightly lower, and average 90 to 92 per cent. of capacity. (This has since been superseded by cable that works are generally working nearly 99 per cent. of capacity.)

Pig Iron.

No. 2 foundry bessemer and basic iron is quoted at $31 to $32.

Steel.

Billets and sheet bars are quoted at $45 to $47.50; wire rods at $55 to $56; rails, 18 to 20lb., at $50. Plates, bars and shapes are quoted at $2·75 to $3 for prompt delivery; sheets, 28 gauge, at $4 to $4·25; galvanised sheets at $5 to $5·50, and No. 10 gauge at $3·25. Skelp is quoted at $3, and plain wire and wire nails at $3 to $3·10; for barbed wire, the price is $3·50 to $3·70. Hoops, 20 gauge, are now at $3·50 to $4. The output of pig iron in the United States during March, 1923—3,521,000 tons—is the highest on record.

Canada—Activity in Iron and Steel.

Conditions in the iron and steel industry continue to show a gradual improvement, mainly due to the great activity of the building trade and the large orders for rails and equipment given out by the railway companies. The monthly report of the Dominion Bureau of Statistics for February, shows a production of 44,250 tons of pig iron as against 40,739 tons in January, and though the output of steel showed a slight falling off, it amounted to 46,537 tons as against 42,388 for February, 1922. The Algoma Steel Corporation's monthly output of about 15,000 tons of pig iron will shortly be largely increased by the re-lining of several blast furnaces, and the rail mill will soon be working at full capacity.

New Enterprises and Expansions.

The R. A. Lister Co., Canada (Ltd.), a branch of R. A. Lister & Co., Ltd., of Dursley, England, has acquired the Petric Manufacturing Co., Hamilton, Ontario. The Burlington Steel Co., has installed a rail-splitting mill and other new equipment, enabling it to produce 65,000 tons of steel bars per year.

Wireless for a Steel Works.

The British Empire Steel Corporation has under consideration a plan for the installation of a complete wireless radio system linking up all its properties in Nova Scotia and Newfoundland. It is believed that this method will furnish speedier inter-communication between the different departments of the works, and with the Corporation's fleet of steamships, and the ore mines on Bell Island, Newfoundland.

Germany—Decreased Productiveness.

At a recent meeting of the Stinnes Group, Herr Karl Fridrich von Siemens, chairman of the Siemens and Halcke Co., said that German prices were now mostly above the world's standard, but only after stabilisation of the currency would it be known exactly "how much, and where, production has been made more expensive by legal and other measures." Appearances were against a speedy return to greater productiveness; the laws now in preparation would hamper production still more.

HADFIELDS Ltd.

Workmen employed
during the war,
over 15,000.

East Hecla and Hecla Works, Sheffield, England.

Works area over
200 acres.

TRADE HECLA MARK DISC CRUSHER.
(SYMON'S PATENT).

THE CRUSHER that excels in output, in economy of power, in uniformity of product, and in low cost of maintenance. WRITE FOR CATALOGUE.

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that reduces ROCK and ORE, WET or DRY, successfully to a smaller product.

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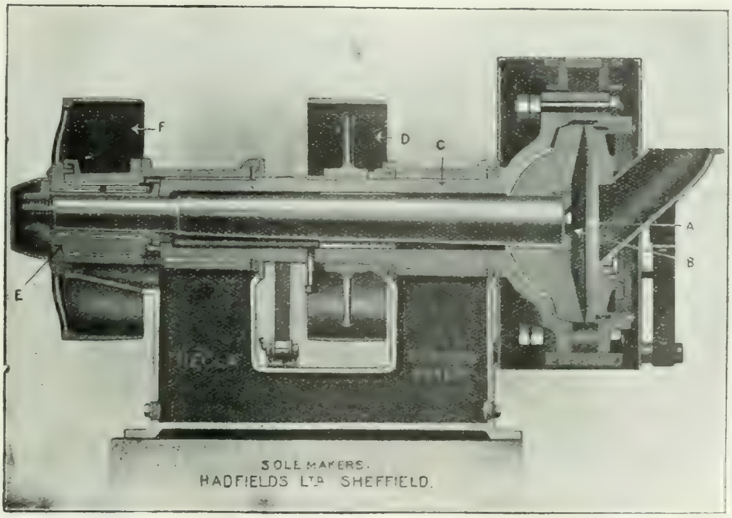
STONE-BREAKING AND ORE-CRUSHING PLANTS.



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The Supreme Material
For the Wearing Parts of Stone-
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Tel. Add.: "HECLA."
Stores: DENVER, TRANSVAAL
(Adjoining Denver Station).

Rhodesian Agents:
WHITMORE & JACKSON,
17 & 18, Agency Chambers, Bulawayo.

Natal Agents:
THOS. BARLOW & SONS (S.A.) LTD.
Smith Street, Durban.

Tube Prices Reduced.

The tube syndicate has somewhat reduced its prices as from April 11.

Lower Iron Prices.

The Stahlbund has announced reductions in iron prices, including blooms, billets, bar iron, thick and thin sheets.

Austria.

The Austrian iron and steel trade, which was in a very bad way, has received a new lease of life as a result of the occupation of the Ruhr. The steelworks in Styria and in Lower Austria are fully occupied on foreign orders mainly from Germany. Great activity reigns in the iron trade in Vienna. The Alpine Mountain Co., the largest steelworks in the country, has more orders on its books than it can cope with and is about to restart its steel and plate mills at Zeltweg. The other rolling mills are also busy, as is the machine tool industry. The firm of Warchalowski and Co., at Wien, has booked an order for 300 locomotives for Italy.

Sweden.

The output of pig iron in 1922 was 260,000 tons as against 730,000 tons in 1913. During this period the malleable iron and steel output has dropped from 744,000 tons to 344,000 tons and the rolled and forged steel output from [illegible] tons to 213,000 tons. Labour disputes reduced the output of pig iron during February of this year by 75 per cent.

Italy.

With conditions becoming more stable, the outlook for British trade is considered to be hopeful. During September and October, 1922, 4,323 and 5,536 tons of pig iron and ferro-alloys were shipped to Italy from Britain as against an approximately similar amount from France. In high-speed steel, Britain's principal foreign competitors are Germany and Czecho-Slovakia, the prices quoted by the latter country being 50 per cent. lower than British prices. The principal obstacles to British trade are, of course, the exchange and the tariff.

Timber and Building Materials.

Business in the timber trade has been satisfactory during the past week and hopes are expressed that the present improvement will continue to expand. Prices are firm and are expected to go higher shortly. Stocks of timber are nearly normal; oversea prices are not going down. Bricks are still in demand, owing to the increased building operations, but remain unchanged in price, with, however, a very firm tendency.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3⅞d.; floorings, 6d. to 6½d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d. to 9d., very firm. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d. to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft. 3 ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12in., 6s.; 15in, 7s. 6d.; 18in., 9s.; dry red oxide, 14s. per 100lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

Reserve Bank.

Ratio of cash reserves to liabilities to public as per Bank Statement on May 19: 71.4 per cent.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

May 28.—Consolidated Langlaagte Mines, Ltd. (s), 11.30 a.m.
Langlaagte Estate and Gold Mining Co., Ltd (s), 12.15 p.m.

May 28.—Consolidated Langlaagte Mines, Ltd. (a), 11.15 a.m.
Langlaagte Estate and G.M. Co., Ltd. (a), 12 noon.
Randfontein Central G.M. Co., Ltd. (a), 3 p,m,
Randfontein Estates G.M. Co. (Wit.), Ltd. (a), 3.30 p.m.

May 29.—New Primrose G.M. Co., Ltd. (a), 11.30 a.m.
New Unified Main Reef G.M. Co., Ltd. (a), 11.45 a.m.
Witwatersrand G.M. Co., Ltd. (a), 12 noon.
New State Areas, Ltd. (a), 2.40 p,m,
Van Ryn Deep, Ltd. (a), 3 p.m.
Government G.M. Areas (M.) Cons., Ltd. (a), 3.45 p.m.
May 29.—Monteleo Diamonds, Ltd. (a), 4.15 p.m.
May 30.—Knight Central, Ltd. (s), 11 a.m.
May 30—Witwatersrand Deep, Ltd. (a), 2.30 p.m.
June 5.—Brakpan Mines, Ltd. (s).
Leeuwpoort (African Farms) Tin Mines, Ltd. (a), 10 a.m.
June 5.—Welgedacht Exploration Co., Ltd. (a), 11 a.m
June 6.—S.A. Townships Mining and Finance Corporation Ltd. (a), 10.30 a.m.
June 8.—West Springs (a), 11 a.m.
Daggafontein Mines (a), 11.30 a.m.
Springs Mines (a), 12 noon.
Brakpan Mines (a), 2.30 p.m.
Rand Selection Corporation (a), 3.15 p.m.
New Era Consolidated (a), 3.45 p.m.
June 9.—Transvaal Coal Corporation (a), 10.30 a.m.
Anglo American Corporation (a), 11 a.m.
June 29.—Durban Roodepoort Deep, Ltd. (s), 10 a.m.
July 19.—Transvaal Consolidated Lands (s), 12 noon.
August 10.—Transvaal Consolidated Lands (s), 12 noon.
Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

800 ft. Masts for Wireless Signals.

We understand that the contract for the supply and erection of the 800 ft. masts for the high-power wireless station in England has been let to Messrs. Head, Wrightson and Co., Ltd., of Thornaby-on-Tees.

BALKIS, LTD.
BANGWAKETSI AND KANYE CONCESSION.

Licences to prospect on the Company's Concessions in Bechuanaland can be obtained of the Company's Prospecting Agent:

D. P. C. BLAIR (P.O. Box 1917),
1, Sauer's Buildings, Loveday Street,
JOHANNESBURG,

by whom all particulars will be furnished to intending Prospectors on application.

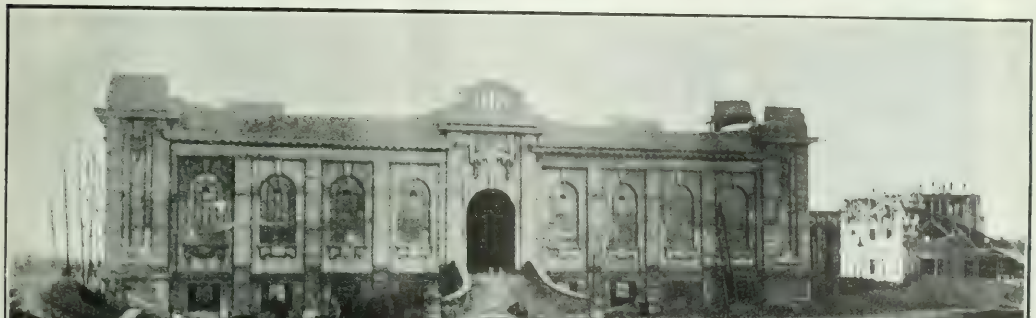
The licences are framed in simple form with revised conditions, which are most favourable to Prospectors.

More Capital for Dunswart Iron and Steel—Our New Industries Section—Important Statements by Mining Company Chairmen.

The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

VOL. XXXIV., PART I. JOHANNESBURG, TRANSVAAL, SATURDAY, JUNE 2, 1923 No. 1653.

Vereeniging as a Growing Centre of Industry.

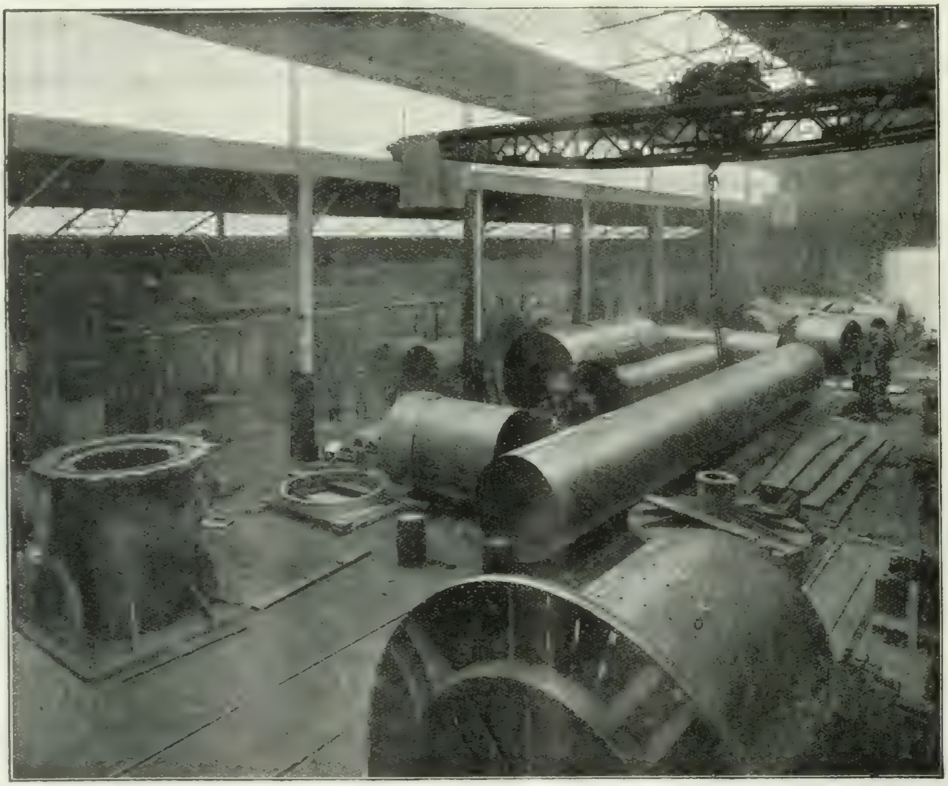


These two photographs, taken specially for the "S.A.M. & E.J." during the past few days, illustrate the wonderful growth of Vereeniging as a centre of industry. The top picture shows the new pumping station of the Rand Water Board, which will pump five, and ultimately ten, million gallons per day to the Rand. The bottom picture reflects a new phase of Messrs. Lewis and Marks's enterprise, concerned with maize and its products. The mammoth silos form a dominating feature of the landscape and are not unlike, in outward appearance, the S.A.R. grain elevators now going up all over the country. They are 100 feet high, and were designed by Mr. W. Littlejohn Philip.

Edgar Allen

'Stag' Tube Mills

and Crushing and Grinding Machinery of Every Description



View of Work in Progress.

Edgar Allen & Co., Limited,
Imperial Steel Works,
Sheffield

HEAD OFFICE IN SOUTH AFRICA :

EDGAR ALLEN & CO. (SOUTH AFRICA), LTD.,
3 and 4, New Club Buildings, .. P.O. Box 551,
JOHANNESBURG.

Another Successful Year at the Government Areas.

CHAIRMAN DESCRIBES THE EXCELLENT POSITION AND PREDICTS LONG AND PROSPEROUS FUTURE—OVER TEN MILLION TONS OF HIGH-GRADE ORE DEVELOPED—SHARE SPLITTING SCHEME TO BE CONSIDERED.

The thirteenth ordinary general meeting of shareholders in the Government Gold Mining Areas (Modderfontein) Consolidated, Ltd., was held in the Board Room, Consolidated Building, Johannesburg, on May 29. There were present Mr. J. Munro (chairman), Sir William Dalrymple, Messrs. D. Christopherson, W. A. Mackenzie, R. L. Innes, J. W. Smith, I. Kanter, A. Lipman, H. Greenstone, E. H. Read, C. W. Southwood, M. N. Nicolson, A. R. Lowick, J. Andrew Cohen, F. W. Baxter, A. Holland, A. C. Collins, Mountstephens and Collins, A. C. Smith, G. Sonn, D. A. Mcgan, A. C. Fordred, F. L. Marx, A. Rayno, A. Sprinz, W. E. Parker, J. McW. Lyttle, C. Sampson and F. Hilner with Messrs. F. Hall (representing the secretaries), and F. E. Jackson (representing the transfer secretaries).

The Chairman, in moving the adoption of the directors' report and accounts, said:—The reports and audited accounts for the year ended December 31, 1922, which have been in the possession of shareholders for some time, are now submitted for approval and adoption.

The quantity of ore crushed during the year was 1,357,000 tons, a decrease of 268,500 tons, and the revenue at the standard price of gold was £2,552,351, a decrease of £275,869 as compared with the previous year. Notwithstanding these decreases, the working profit shows an increase of £212,194, due partly to an increase in grade and partly to a decrease in the working costs. To the working profit, based on the standard price of gold, there falls to be added an amount of £225,523, representing the premium on gold.

The average price obtained for gold for the calendar year 1921 was £5 5s. 9d. per fine ounce, whereas the price for 1922 averaged £4 12s. 5d. per fine ounce. This decrease represents no less a sum than £400,583. Taking into consideration the protracted strike in the first quarter of the year, the effects of which were felt for some time after its termination, and the heavy fall in the price of gold, the results obtained and the financial position of the company are highly satisfactory.

The Year's Profit.

The net profit for the year after allowing for the expenditure incurred in connection with the strike and revolution, donations, income tax and employers' tax, etc., carried to the appropriation account, amounted to £1,457,456, to which must be added the sum of £160,524, the balance brought forward from the previous year, making a total of £1,617,980, which is accounted for as follows:—

Dividends of 20 per cent. and 30 per cent., respectively, were declared payable to shareholders registered on June 30 and December 31, 1922, absorbing	£700,000
The estimated amount payable to the Government in respect of their share of profits ...	737,839
Capital expenditure provided out of profits ...	39,085
Leaving a balance carried forward to this year of	141,056
Total	£1,617,980

The development footage accomplished during the year totalled 34,261 feet, of which 13,173 feet were on reef; 13,230 feet were sampled, giving the high percentage payability of 70·22, of an average value of 11·6 dwts. over 60 inches.

Enormous Ore Reserves.

The ore reserves were recalculated at the end of the year, and were estimated to stand at 10,324,000 tons, having an average value of 8·8 dwts. over 76 inches of reef.

Turning to the current year, it is pleasing to note that an average of 142,875 tons per month has been crushed, and the sorting of waste rock has been increased to 20·2 per cent. The working costs for the four months of this year have averaged 18s. 1d. per ton, and when the fact that this included rather more than 1s. 0d. for gold realisation charges and exchange on drafts is taken into consideration, I think you will agree that in the circumstances this figure is satisfactory. When gold realises par and the bank exchange falls to normal there will be a corresponding decrease, and when the Government realises that one of the principal functions of railways is to promote the industries of the country and take steps to reduce the present unduly high rates, the future may hold some reduction in the cost of stores. The working profit for the four months of this year amounted to £544,588 which is equivalent to 19s. 1d. per ton crushed.

Since the beginning of the year the ventilation shaft has been sunk a further 300 feet, making a total depth of 517 feet at the end of April. At the commencement of sinking large quantities of water were encountered in the dolomite. Following on this we had to sink through an unusually large thickness of syenite, which is very hard and difficult to drill. Both these difficulties have now been surmounted, and it is anticipated that better progress will be made from now on. On the completion of this shaft, the conditions underground will be greatly improved, and it will provide for the ventilation throughout the life of the mine. When the scheme approaches completion, the question of increasing the reduction plant will be carefully gone into, and if it is then considered advisable and in the interests of the shareholders the necessary steps will be taken to enlarge the plant.

The position of the mine, with its reserve of over ten million tons of high grade ore, is excellent, and a long and prosperous future is assured.

Two shareholders, in forwarding their proxies for this meeting, suggested that the shares be split, and that two or four shares of the nominal value of 5s. or 10s. be issued in exchange for one of the existing £1 shares. The directors will take this matter into consideration at an early date.

I now beg to move that the reports and accounts for the year ended December 31, 1922, as submitted, be adopted.

Shareholders' Congratulations.

Mr. J. Andrew Cohen, in seconding, said that after the very clear and lucid statement that had emanated from the chair there was very little he could add other than words of congratulation as a shareholder. He felt that in sounding that note of congratulation he was expressing the view of every shareholder not alone in this country, but overseas. (Hear, hear.) He thought the record of the Government Areas ranked perhaps as one of the most outstanding features of mining on the Rand. The success of the company was due to the vigilant support that had been given to its affairs by the board of directors and its technical advisers, and it afforded him the greatest possible pleasure to congratulate everybody associated with their company for the record of work that had been done in the past. (Applause.)

Mr. Sprinz asked the Chairman if he would give any idea of what the next dividend was likely to be.

The Chairman said that so far as the board was concerned they made a point of waiting until they got the May return in before estimating the dividend, because anything might occur between the end of April and the end of June. The May return would be made early in June, and then they would know practically what they might expect at the end of June, but they did not like to prophecy so early in the half year as the present time. He would, however, promise them that a dividend would be declared.

The motion for the adoption of the report was carried unanimously.

The retiring directors, Messrs. J. Munro and S. B. Joel, were unanimously re-elected, and the retiring auditors, Messrs. E. Dangerwood and Co. and Messrs. Douglas Law and Co., reappointed

"Satisfactory Results" Predicted for New State Areas.

MINE "OPENING UP WELL"—PLANT PROMISES "TO BE A GREAT SUCCESS."

The sixth ordinary general meeting of shareholders in the New State Areas, Ltd., was held on May 29 in the Board Room, Consolidated Buildings, Johannesburg. Mr. J. Munro presided, and there were also present Professor J. G. Lawn, Messrs. M. N. Neumann, R. L. Innes, A. Lipman, E. W. Southwood, A. Kamm, A. Sprinz, J. W. Smith, H. Greenstone, G. C. Fitzpatrick, F. Hall (representing the secretaries), and F. E. Jackson (representing the transfer secretaries).

The Chairman, in moving the adoption of the report of the directors and accounts, said:—The directors' report, together with the audited balance sheet for the year ended December 31, 1922, which has been in the hands of shareholders for some time, are now submitted for approval and adoption.

The amount expended upon capital account during the year amounted to £175,181, making the total expended to December 31, 1922, £1,463,143, while a further £19,090 has been spent on administration and general expenses, and £19,128 in connection with the strike which occurred in the early part of the year. To enable these payments to be made the balance due on partly-paid shares was called up, so that at December 31 the capital of the company—viz., £1,500,000—was fully paid up.

In order to complete the erection of the plant and to carry on the underground development, arrangements were made with the company's bankers for further funds, but on March 28 of this year a circular was issued to shareholders inviting applications for £500,000 first mortgage debentures at 6 per cent. The whole of the issue was fully subscribed, and the amount provided by the issue to liquidate the overdraft at the bank was sufficient for the completion of the erection of the plant and the development work to bring the mine to the producing stage.

Large Development Footage.

The year was one of preparation for the commencement of crushing operations, and a comparison of the sketch plans issued with the 1921 and 1922 reports will show the large amount of development which has been accomplished. The development footage for the year reached a total of 27,561 feet, and, taking into consideration the interruption of work during and immediately following the strike, may be considered highly satisfactory. Of this footage, 15,710 feet were sampled, and it was found that 55·82 per cent. was payable, having an average value of 28·3 dwts. per ton over 22 inches of reef. At the end of the year it was estimated that the ore reserves stood at 1,100,000 tons of an average value of 8·5 dwts. over a stoping width of 68 inches, in addition to which there were approximately 330,000 tons partially developed of the same average value as the ore reserves. Since the close of the year development has been pushed forward, and the mine is in a position to keep the reduction plant fully supplied.

New Reduction Methods.

The erection of the reduction plant, although not entirely completed at the end of April last, was sufficiently advanced to enable crushing on a small scale to commence on May 1. In the case of any new plant starting up there are always small difficulties encountered and adjustments to be made, and, of course, in the case of such a plant as that on your mine, where a new scheme of treatment has been adopted, the difficulties met with are somewhat more extensive than would have been the case if the old design of plant had been followed. So that the running of the plant for the first month or two must be looked upon as experimental. However the plant gives promise of being a great success, and as the different sections of it are gradually brought into commission and tuned up there is every reason to anticipate that it will do all that was expected of it. The mine is opening up well, and when the whole of the plant has been completed and is running there is every reason to believe that the results will be satisfactory to shareholders.

I now beg to move that the reports and accounts for the year ended December 31, 1922, as submitted, be adopted.

This was seconded and agreed to unanimously.

The retiring directors, Messrs. G. J. Joel and S. B. Joel, were unanimously re-elected, and the retiring auditors, Messrs. E. Danckwerts and Co. and Messrs. Alex, Aiken and Carter, were re-appointed.

Mr. Sprinz asked when the shareholders might expect to get a monthly report of operations.

The Chairman replied that one would be issued for May, and it was hoped that there would be one for June. Up to the present little beyond getting the plant in order had been accomplished.

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TEN PRONG

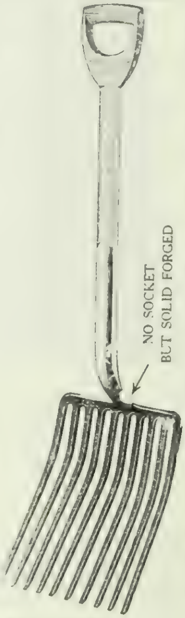
BALLAST FORKS

AS USED BY

THE SOUTH AFRICAN RAILWAYS AND MUNICIPALITIES

IMPORTANT.

The Blades of these Forks are not simply stuck into a socket, but are SOLID FORGED throughout and securely strapped and riveted on to Ash Handles.



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Box 3162 JOHANNESBURG. 'Phone 4673

WORKS: CLYDE STEEL WORKS SHEFFI

The New Unified to Close Down.

CHAIRMAN REVIEWS THE MINE'S EFFORTS TO KEEP GOING—ITS 20-YEAR DIVIDEND RECORD.

The twenty-fifth general meeting of shareholders in the New Unified Main Reef Gold Mining Company was held in the Board Room, Consolidated Buildings, Johannesburg, on May 29. Mr. J. Munro (chairman) presided, and there were also present Professor J. G. Lawn, Messrs. F. L. Marx, R. L. Innes, E. Brayshaw, F. Hall (representing the secretaries), and F. E. Jackson (representing the transfer secretaries).

The Chairman, in moving the adoption of the directors' report and audited accounts for the year ended December 31, 1922, which have been in the hands of shareholders for some time and are now submitted for approval, said: "In common with other mines on the Rand, your company suffered very severely owing to the interruption of mining operations caused by the strike in the early part of the year. The quantity of ore crushed during the year amounted to 111,300 tons—a decrease of 22,400 tons as compared with the previous year. This decrease would have been greater had it not been that during the strike a considerable quantity of ore was crushed from the surface dumps. The working profit amounted to £9,959, as against £24,207 for the year 1921, the decrease being due to the strike and to the heavy fall in the price obtained for gold. The lower price of gold obtained in 1922 as compared with 1921 was 13s. 6d. per fine ounce, and represented no less a sum than £15,895. This loss of revenue was to some extent counteracted by the reduction in working costs, which was made possible by the reorganisation underground and increased efficiency when normal conditions obtained after the termination of the strike. After adding the sundry revenue of £819 to the working profit, and deducting the strike expenditure of £8,951, and £891 for employers' tax, maintenance of the Phthisis Sanatorium, and donations, there remained a net profit of £936 to be carried to the appropriation account. This sum, added to the balance brought forward from 1921, made a total of £15,393, which, in view of the proposed closing of the mine and the large contribution which in terms of the Miners' Phthisis Act will have to be made to the Phthisis Fund when mining ceases, your directors did not consider themselves justified in distributing to shareholders.

Professor J. G. Lawn, Joint Managing Director and Consulting Engineer, Johannesburg Consolidated Investment Co., Ltd.

Twenty Years' Dividends.

"The ore reserves at the end of the year were practically exhausted, and, while there remained some low-grade rock from reclamation and from the surface dumps to be milled, it was considered necessary to give the Government Mining Engineer three months' notice as from January 1 of the current year of the intention to close the mine. The Government appointed a Committee of Inquiry in regard to the necessity for closing, and the evidence led before it showed that, as the mine was worked out, there was no alternative but to close down. It has been possible, by keeping down the expenses to a minimum and exercising the greatest vigilance, to keep the mill running until now, but the point has at last been reached when profitable mining cannot be carried on, and it has been decided to cease mining operations at the end of next month. The company as at present capitalised commenced operations in 1903, and during the 20 years of its existence distributed dividends amounting to 220 per cent. I now beg to move that the reports and audited accounts for the year ended December 31, 1922, as submitted, be adopted."

Mr. Brayshaw seconded, and the motion was unanimously agreed to. The appointment of Mr. J. H. Crosby as a director in the place of the late Mr. E. Danckwerts was confirmed, and Messrs. F. L. Marx and E. Brayshaw, the retiring directors, were unanimously re-elected. The retiring auditors, Messrs. Goldby, Panchaud and F. W. Bompas, were reappointed.

South Africa's Share of World's Coal Output.

Figures showing the output of coal from the Union of South Africa as compared with that of other countries have importance as reflecting the relative extent of our industry. In the following comparative table, which is taken from the carefully gathered statistics of the United States Geological Survey, it will be seen the Union produces about as much each year as Canada, more than half as much as British India, and not quite half as much as Japan. The slight falling off in the total tonnage will also be noted:—

Country.	1920.	1921.	1922.
North America:			
Canada: Coal	11,812,871	10,636,471	10,093,055
Lignite .	3,275,304	2,918,991	2,797,418
United States:			
Anthracite	81,282,000	82,076,000	47,000,000
Lignite & bituminous	515,883,000	377,316,000	370,000,000
Other countries ..	502,308	502,200	(a)
South America :	1,794,637	2,040,598	(a)
Europe:			
Belgium	22,388,770	21,750,410	21,234,170
Czechoslovakia: Coal	11,143,221	11,648,399	b 10,000,000
Lignite .	19,943,258	21,050,712	b 19,000,000
France: Coal ..	24,293,000	28,243,000	b 22,000,000
Lignite	967,800	735,600	
Germany: Coal .	140,766,397	145,610,000	d 140,965,000
Lignite ...	111,887,694	123,011,000	137,207,000
Poland	6,660,145	7,842,553	e 23,800,000
United Kingdom:			
Great Britain ...	233,106,377	165,781,404	255,892,000
Ireland ...	109,845	89,958	(a)
Other countries ...	33,521,009	36,183,546	(a)
Asia:			
British India	18,250,508	19,511,154	19,000,000
China	19,484,896	(a)	(a)
Japan (including Taiwan and Karafuto) ...	30,838,066	26,000,000	25,000,000
Other countries .	3,482,838	4,309,156	(a)
Africa:			
Union of South Africa	10,408,497	10,339,044	b 10,000,000
Other countries ..	748,933	755,935	(a)
Oceanica:			
Auctralia ...	13,176,426	13,084,210	(a)
Other countries	3,127,962	3,210,796	(a)
	1,318,900,000	1,133,600,000	1,200,000,000

(a) Estimate included in total. (b) Estimated on 11 months' production. (c) Includes the Saar basin. (d) Includes entire output of Upper Silesia from January-May, inc. For months, June-December, only the output of the portion of Upper Silesia awarded to Germany is included. (e) Includes output of the portion of Upper Silesia awarded to Poland for months, June-December, inclusive.

Van Ryn Deep's "Sound Position" and "Excellent Prospects."

SPLENDID ORE RESERVES—40 PER CENT. IN DIVIDENDS—RECENT RESULTS.

The eighteenth ordinary general meeting of shareholders in the Van Ryn Deep, Ltd., was held on May 29, in the board-room, Consolidated Buildings, Johannesburg, Mr. J. Munro presiding. There were also present: Professor J. G. Lawn, Sir William Dalrymple, Messrs. R. L. Innes, W. T. Russell, W. T. Warmer, J. J. Fern, T. A. Morgan, F. G. Marx, E. E. Rand, J. C. Sampson, F. Hiner, A. Lipman, G. W. Southwood, H. Greenshields, G. C. Fitzpatrick, J. Kester, F. W. Baxter, J. W. Smith, E. R. Grant, A. E. Smith, F. Hall (representing the secretaries), and F. E. Jackson (representing the transfer secretaries).

The Chairman, in moving the adoption of the directors' report and accounts, said: "The directors' report and audited accounts for the year ended December 31, 1922, which have been in the hands of shareholders for some time, are now submitted for your approval and adoption.

The quantity of ore crushed fell short of the total crushed in the previous year by 80,390 tons, but the working profit, based on the standard price of gold, was only £62,203 lower than for 1921. Taking into consideration the interruption due to the protracted strike, with its consequent loss of revenue, and the heavy fall in the price of gold, the average price being 13s. 7d. per fine ounce less than in 1921, which represents a difference of no less a sum than £173,728, the results obtained for the year must be considered as highly satisfactory. The working costs at 21s. 9d. per ton show a reduction of 4s. 9d. per ton over the previous year. This decrease is due to the reorganisation of underground work and the increased efficiency which became possible on normal conditions obtaining after the termination of the strike.

The total development accomplished amounted to 12,494 feet, of which 4,362 feet were on reef, the sampling of which showed that 84 per cent. was payable, having an average value of 31·8 dwts. per ton over 27 inches of reef. The development was devoted chiefly to opening up the north-eastern extremity of the mine, and to making arrangements for exploring the south-eastern section. The results obtained in these areas were highly satisfactory, the reef exposed being of excellent value. Very little development was done in the western section of the mine, the work in this part being confined to arrangements for stoping and transporting ore already developed there.

Big Ore Reserves.

In accordance with our usual custom, the ore reserves were re-calculated at the end of the year, and were estimated at 3,427,300 tons of an average value of 8·4 dwts. over 77 inches of reef. Included in these figures are 286,000 tons of ore from the western section of an average value of 5·4 dwts. over a stoping width of 118 inches. Compared with the previous year, the ore reserves show an increase of 110,300 tons, but a decrease of ·8 dwt. in the average value; the decrease being principally due to an increase of four inches in the stoping width.

The net profit carried to the appropriation account, after deducting the expenditure of £37,152 incurred in connection with the strike, an amount of £3,691 for employers' tax, £[illegible]50 for donations, and £100 for depreciation of live stock and vehicles, amounted to £497,697, out of which two dividends of 10 and 30 per cent., absorbing £478,757, were paid to shareholders registered at June 30 and December 30 respectively.

Turning now to the current year, it is pleasing to record that the average monthly quantity of ore crushed during the four months amounted to 57,000 tons, and the costs at 21s. 9d. per ton, though slightly higher than for the last quarter of 1922, are well below the average for that year. A new electric hoist is being installed at the west vertical shaft, and the bringing of this into commission, together with the re-arrangement of underground transport, referred to in the consulting engineer's report, will, it is confidently anticipated, result in further reductions in working costs.

High Value Ore.

Development of the north-eastern extremity of the mine and the south-eastern leg has been continued during this year, and ore of a high value has been exposed. The results of this development show that the remainder of the area on the eastern side of the mine contains highly payable ore, and there is every reason to believe that this portion of the mine will provide tonnage equal in value and amount of not less than the present ore reserves.

The development in the western section of the mine has been recommenced, and the results obtained are satisfactory. As yet, stoping operations in this area have not been carried out on a large scale, but, in order to give shareholders some idea of the possibilities of the western section of the mine, I may say that one stope is showing an average value of 6·9 dwts. over 155 inches of reef.

Since the close of the year, two claims, known as the "Eaton Block," have been purchased by the company. Sampling in the vicinity of these claims disclosed ore of very high value, and the purchase will prove a valuable asset to your company. In conclusion, I would add that the position of the mine is extremely sound, and the prospects for the future are excellent.

I now beg to move that the reports and accounts for the year ended December 31, 1922, as submitted, be adopted.

The motion having been seconded, Mr. E. R. Grant asked if it was the intention of the directors to give further development to the western section. Could they not put more energy ino it?

The Chairman said that in that connection he might say that there was a good deal of linking up to do to get that section into condition, but development was now going on there, and had been started on a considerably larger scale since the 1st of last month.

Mr. F. W. Baxter asked if the development on the western section would add materially to the life of the mine.

The Chairman replied that it was anticipated that it would add largely to the life of the mine, because the reefs were very wide, and they hoped to get from that section a very large tonnage.

Mr. Grant thought the shareholders should pass a vote of thanks to the chairman and his co-directors for the excellent services they had rendered to the company. (Hear, hear.) He trusted the chairman would long continue to preside over the affairs of the company, and that the mine would have a long life and yield bumper dividends.

The Chairman expressed his appreciation of the sentiments and their endorsement by the meeting.

The motion for the adoption of the report was then put to the meeting and carried unanimously.

The appointment of Mr. John Munro as a director in the place of the late Mr. Charles Marx was confirmed. The retiring directors, Messrs. John Munro and J. G. Lawn, were unanimously re-elected. The auditors, Messrs. Alex. Aiken and W. Fergusson, were re-appointed.

"Knights" Ore Reserves and Development.

ADDITIONAL GROUND ACQUIRED TO MAINTAIN RATE OF MILLING—VERY SATISFACTORY RESULTS FOR LAST YEAR.

The annual general meeting of shareholders in the Witwatersrand ("Knights") Gold Mining Company was held on May 29, in the board-room, Consolidated Buildings, Johannesburg, Mr. John Munro (chairman), presiding. There were also present Professor J. G. Lawn, Messrs. R. L. Innes, J. Dale Lace and A. Sprinz, with Messrs. F. Hall (representing the secretaries) and F. E. Jackson (representing the transfer secretaries).

The chairman, in moving the adoption of the directors' report and balance sheet, said:—

I beg to submit for your approval and adoption the directors' report and audited accounts for the year ended December 31, 1922.

Notwithstanding the interruption caused by the strike and revolution in the early months of the year, the quantity of ore crushed was only 25,900 tons less than the total milled in 1921, while the working profit, apart from the expenditure incurred in connection with the strike, amounted to £92,440, as compared with £91,051 for the previous year. The net profit carried to the appropriation account, after adding the estate revenue, interest and rents, amounting to £21,348, and deducing £27,192 strike expenditure and £7,279 for income tax, donations and maintenance of the Miners' Phthisis Sanatorium, amounted to £79,317.

The amount brought forward from the previous year, amounting to £188,892, added to the net profit for the year, made a total of £268,209, and enabled your directors to declare two dividends of 5 and 15 per cent. to shareholders registered at June 30 and December 31 respectively, and to carry forward the sum of £174,283 to the current year. When the heavy fall of 13s. 5d. per fine ounce in the average price obtained for the gold as compared with the price for 1921, equalling no less a sum than £72,817, and the loss caused by the revolt, are taken into account, it must be agreed that the results obtained for the year are very satisfactory.

Working costs averaged 19s. 4d. per ton milled, as compared with 23s. 9d. for the previous year, but these figures are perhaps scarcely comparable, owing to the strike. It is, however, noteworthy as showing the effect of the reorganisation in the underground work, and the increased efficiency which became possible when normal conditions obtained on the termination of the strike, that the working costs for the last quarter of 1922 averaged 17s. 9d. per ton—a decrease of 3s. 11d. as compared with the corresponding period of 1921.

Good Development Results.

The development accomplished during the year totalled 4,705 feet. Of this footage 3,550 feet were sampled and 2,000 feet were found payable, having an average value of 12·9 dwts. over 32 inches of reef. The ore reserves were recalculated at December 31, 1922, and were estimated to stand at 157,400 tons of an average of 5.5 dwts. over 63 inches of reef, showing a decrease of 89,900 tons as compared with the previous year.

With regard to the operations of the past four months, the average monthly tonnage amounted to 46,975 tons, and the working costs have been maintained at the average of the last quarter of 1922—viz., 17s. 9d. per ton milled. The working profit for this period equalled 3s. 8d. per ton, and amounted to £31,214.

The development on the eastern side of the mine in the lower workings is opening up a certain amount of payable ore on the south reef. This, however, is not of high value, and the mine has now reached a stage when it is not possible for the development to keep pace with the depletion of the ore reserves.

The supply of native labour has been plentiful from shortly after the termination of the strike, and it is only during the past few weeks that there has been any falling off. The mine is largely dependent on hand labour, and a full complement of natives is necessary for the profitable working of the mine, any depletion in the labour force being immediately felt in the tonnage output.

Since the close of the year arrangements have been made with the Government for the company to take over another portion of the Knights Deep ground. While the ore in this area is of low value, it will be useful in enabling the plant to be run at its full capacity, and will thus enable the ore reserves to be worked to better advantage. I now beg to move that the reports and accounts for the year ended December 31, 1922, as submitted, be adopted.

Mr. Innes seconded, and the motion was carried unanimously.

The meeting confirmed the appointment as directors of Messrs. James H. Crosby and Geoffrey J. Joel in the place of the late Mr. Charles Marx and the late Mr. William Ross, respectively. The retiring auditors, Messrs. H. Nourse and J. Dale Lace, were unanimously re-elected. The retiring auditors, Messrs. F. W. Diamond and English and Messrs. Charles Stuart and F. E. Roberts, were re-appointed.

THE NEW VEREENIGING.

New Road Bridge over the enlarged Vaal River, showing in the background the Railway Bridge and V.F.P. Station.
Photo taken exclusively for the "S.A.M & E J"

The Greater Future for the Langlaagte Estate.

ANNUAL AND SPECIAL MEETINGS CONFIRM ABSORPTION OF THE CONSOLIDATED LANGLAAGTE—DEVELOPMENT AND ORE RESERVES.

The thirty-second general meeting of shareholders of the Langlaagte Estate and Gold Mining Company, Ltd., was held on May 28th, in the Board Room, Consolidated Buildings, Johannesburg. There were present Mr. J. Munro (chairman), Professor J. G. Lawn, and Messrs. [illegible], H. W. [illegible], M. N. [illegible], F. F. Jackson, C. P. [illegible] and P. Goodman, Mr. F. Hill representing the secretaries, and F. F. Jackson (transfer secretary).

The chairman, in moving the adoption of the report and accounts, said:—

The directors' report and audited accounts for the year ended December 31, 1922, which have been in the hands of shareholders for some time, are now submitted for your adoption.

Notwithstanding the interruption of mining operations in consequence of the general strike and revolt which occurred in the early part of the year, the total quantity of ore crushed was only 21,544 tons less than was crushed in 1921, and the number of fine ounces recovered fell short of the previous year by only 161 ounces. Apart, however, from the loss of revenue during the period of interruption of operations, the direct expenditure incurred in connection with the strike amounted to £39,827. A very serious factor which also affected the results for the year was the heavy fall which occurred in the price of gold. The average price for 1921 worked out at £5 5s. 10d., whereas the average for the past year was 13s. 7d. per fine ounce lower, and represented no less a sum than £99,654. To some extent the decrease in revenue was counteracted by the reduction in working costs, resulting from increased efficiency, and the reorganisation of the underground work and improvements which it was possible to introduce on the termination of the strike. The working costs for the last quarter of the year averaged 21s. 1d. per ton, as compared with 24s. 8d. for the corresponding period of 1921.

Working Profits.

The working profit for the year amounted to £163,727, which, with the addition of £9,710 from sundry revenue, made a total of £173,437. After deduction of the expenditure incurred in connection with the strike, amounting to £39,827 and £15,211 for income tax, employers' tax, maintenance of the Miners' Phthisis Sanatorium, etc., left a balance of £118,399 to be carried to the appropriation account. This amount, with the balance brought forward from 1921 amounting to £86,192 made a total of £204,591, out of which a dividend of 7½ per cent. was declared to shareholders registered on December 30, 1922. This dividend absorbed £66,487, which, together with the net expenditure on capital account amounting to £82,352, left £55,752 to be carried forward to this year.

During the year the Hubbard incline shaft was sunk 566 feet, and at the end of December had reached the horizon of the 27th level and incline depth of 4,170 feet, and a vertical depth of 3,181 feet below the collar of the vertical shaft. The sinking of a shaft on the ground acquired in conjunction with the Crown Mines, Ltd., from the Lobatsi Estate, and known as the Langlaagte Proprietary section, was commenced, and at the end of last month had reached an incline depth of 616 feet. The acquisition of this area should prove a valuable asset to your company.

Development and Reserves.

The development footage accomplished totalled 12,350, an increase of 873 feet over the previous year, and of the footage on reef sampled 54 per cent. was payable, having an average value of 26 dwts. per ton over 20 inches.

The ore reserves, which were recalculated at the end of the year, show a decrease of 119,200 tons, but an increase of half a pennyweight in the value per ton, and were estimated to stand at 830,800 tons of an average value of 6.9 dwts. over 54 inches of reef.

Turning now to the work of the past four months, while the working costs at 22s. are somewhat higher than the average for the last quarter of 1922, they are well below the average of last year. The quantity of ore crushed averaged 39,025 tons per month, and the working profit for the period amounted to £74,926.

At a special general meeting of shareholders held on May 4th, it was resolved to purchase the undertaking of the Consolidated Langlaagte Mines, Ltd., for a consideration of two shares in your company for every three in the existing capital of the Consolidated Langlaagte Company, and to increase the capital of your company to enable this to be done. There is no doubt that the amalgamation will be of great benefit to both companies. It will enable the old mill to be closed down with its obsolete adjuncts, cumbrous and expensive appliances for the transport of ore, and convert the two mines into a much more compact and workable proposition than the Langlaagte Estate has been in the past, and will result in a saving in working costs, and to materially add to the life of the two mines.

Mr. John Munro, Joint Managing Director, Johannesburg Consolidated Investment Co., Ltd.

I now beg to move that the reports and accounts for the year ended December, 1922, as submitted, be adopted.

The motion was carried unanimously.

Mr. J. H. Crosby, the retiring director, was unanimously re-elected, and Mr. F. L. Marx (director of the Consolidated Langlaagte) was unanimously elected to fill the vacancy on the Board. The auditors, Messrs. C. L. Andersson and Co. and W. Ferguson, were unanimously reappointed.

In reply to Mr. P. Goodman, who asked when they expected to strike the reef, the chairman said they were sinking on the reef.

Professor Lawn added that they started sinking on the top of the dyke. They had gone through the dyke, and were now sinking in contact with the reef.

Special General Meeting.

At the conclusion of the above meeting a special general meeting of shareholders was held, when, in addition to the above-mentioned directors and shareholders, Mr. G. S. Kope was present.

On the motion of Professor Lawn, the special resolutions concerning the taking over of the assets of the Consolidated Langlaagte were unanimously confirmed.

DESIGNS —— DRAWINGS —— TRACINGS

Working Drawings made from clients' sketches and instructions; mechanical and structural work handled for inspection or supervision; drawings prepared for patent specification.
J. E. PARKER, M.I.Mech.E., M.A.I.M.E.,
'Phone 1760. Box 559, Pretoria.

Consolidated Langlaagte Merges with it's Neighbour

CHAIRMAN'S REVIEW OF POSITION TO DATE—SALE TO ESTATE CONFIRMED.

The twentieth general meeting of shareholders of the Consolidated Langlaagte Mines, Ltd., was held on May 28th in the Board Room, Consolidated Buildings, Johannesburg. Mr. J. Munro presided, and there were also present: Messrs. R. L. Innes, F. L. Marx, G. C. Fitzpatrick and M. L. Nicolson, with F. Hall (representing the secretaries) and F. E. Jackson (transfer secretary).

The Chairman, in moving the adoption of the directors' report and accounts, said:—I have pleasure in submitting for your adoption the directors' report and audited accounts for the year ended December 31, 1922. A comparison of the results of last year with those of the previous year would be very misleading, owing to the strike of miners which occurred in February, 1921, and the interruption of mining operations caused through the general strike and revolt in the early months of the year under review.

The effect of the revolt was felt for a considerable time after its termination, and it was not until the end of June that the mine obtained a sufficient supply of native labour. In consequence of the reorganisation of the underground work and increased efficiency, there was a marked improvement in the working costs during the latter half of the year, and the costs for the last quarter averaged 19s. 9d. per ton, as compared with 23s. 4d. per ton for the corresponding period of 1921. An adverse factor which affected the results was the heavy fall in the price obtained for gold. The average price for 1921 was £5 5s. 11d., as compared with £4 12s. 2d. per fine ounce for the past year—a decrease of 13s. 9d. per ounce, and equivalent to no less a sum than £78,388. When these facts are taken into consideration, the net profit for the year was £45,452, carried to the appropriation account, may be considered as satisfactory. The balance brought forward from 1921 account amounted to £71,450, making a total of £116,902, and is accounted for as follows:—

A dividend of 5 per cent. was distributed to shareholders registered at December 30, 1922, absorbing £47,500. The final instalment of the debentures, together with the capital expenditure against which there was a recoupment for sales of machinery no longer required, and an amount recovered on account of the fire at the " Star " shaft, absorbed a further £21,104, leaving £48,298 to be carried forward to the current year.

Although the development accomplished during the year is somewhat less than in 1921, it must be remembered that it was practically all done in the latter half of the year. The results obtained were more encouraging than have been the case for some years past, and the ore reserves were maintained at practically the same figures as at the end of the previous year. On the recalculation at the end of December last they were estimated to stand at 1,385,000 tons of an average value of 6·4 dwts. over 51 inches. While there was a decrease of ·1 dwt. per ton in the value, the quantity was slightly increased, and the stoping width remained the same as for the previous year.

Working Profit.

The working profit for the past four months, when 183,500 tons were crushed, amounted to £36,695, and the working costs, while averaging somewhat higher than the last quarter of 1922, at 20s. 3d., are well below the average costs for the past year.

At a meeting held on the 4th of this month it was decided to confirm the provisional agreement which had been entered into with the Langlaagte Estate and Gold Mining Company to sell the undertaking and all the assets and liabilities of your company to that company in exchange for two Langlaagte Estate shares for three shares in the existing capital of your company. The amalgamation of the two companies is one which will be for the mutual benefit of the shareholders, and will materially add to the life of the two mines.

I now beg to move that the reports and accounts for the year ended December 31, 1922, as submitted, be adopted.

Mr. G. C. Fitzpatrick seconded, and the motion was agreed to unanimously.

The meeting confirmed the appointment of Mr. Geoffrey J. Joel as a director in place of the late Mr. E. Danckwerts, and the retiring directors, Messrs. J. Munro and J. H. Crosby, were unanimously re-elected. The auditors, Messrs. W. Fergusson and Messrs. Douglas Low and Co., were reappointed.

SPECIAL MEETING.

At the conclusion of the ordinary meeting of the shareholders as above a special general meeting was held, there being present the above-mentioned directors and shareholders, with the addition of Professor J. G. Lawn and Mr. J. G. Butcher. The meeting was convened for the purpose of confirming the resolutions passed at the meeting on May 4, under which the liabilities of the company were sold to the Langlaagte Estate Gold Mining Co., Ltd.

Resolutions placing the company in voluntary liquidation, and for its winding up, were unanimously confirmed.

The Chairman stated that the issue of the Langlaagte shares would be taken in hand as quickly as possible.

Asbestos Sales Value.

Mr. W. A. Wright has addressed a letter to the Bulawayo Chronicle regarding asbestos sales values in which he says:—

Sir,—In the " Mining Notes and News " appearing in this morning's " Chronicle " your correspondent falls into a very common error in arriving at the average selling price of Rhodesian Asbestos by taking the published figures for the year and dividing the values so declared by the tonnage produced.

This method of calculation is erroneous, as the total value declared includes adjustments made on asbestos some of which was produced in previous years. For the year 1922 the adjustments amounted to over £250,000 out of a declared value of £577,000.

Although it is quite impossible for anyone not having access to the books of all the Rhodesian asbestos companies to ascertain the average selling prices, there is no doubt that the majority of the Rhodesian producers did not receive anything like the price of £40 per ton named by your correspondent for their product during 1922.

Your correspondent will now understand why, in my remarks at the annual meeting of the Chamber of Mines, I referred only to the tonnages and not to values, and he should not accuse me of conveying " a very distorted impression of the Rhodesian asbestos industry."—I am, etc.,

W. A. WRIGHT.

Bulawayo, May 3, 1923

* * *

Lonely Dividend.

The Lonely Reef G.M. Co. announces an interim dividend of 10 per cent.

G.E. Factories. No. 4.

Trade Mark.

The Home of Quality Products.

5,500 *Employees* *Ground Area* 64 *acres* *Floor Space* 1,445,000 *sq. feet*

These are our Fort Wayne Works.

Where we manufacture:

FRACTIONAL H.P. MOTORS,
METERS AND INSTRUMENTS,
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The General Electric Co. of N.Y. has the distinction of being not only the largest, but also the best equipped, manufacturer of electrical apparatus in the world.

Just think what this means to you.

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Johannesburg

Tyne Buildings
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Capetown

WITH AGENTS THROUGHOUT SOUTH AFRICA

Randfontein Central's Altered Outlook.

LONG STRUGGLE HAS RESULTED IN ESTABLISHING THE MINE ON A PERMANENT FOOTING—MONTHLY CRUSHING CAPACITY OF 200,000 TONS FORECASTED.

The sixteenth general meeting of shareholders in the Randfontein Central Gold Mining Company was held in the Board Room, Consolidated Building, Johannesburg, on May 28, when there were present Mr J. Munro (chairman), Professor J. G. Lawn, Messrs. R. L. Innes, F. L. Marx, H. W. Folly, T. C. McMillan, S. Ward, F. Mann, J. Phillips, P. Goodman, C. P. Burkhardt, with F. Hall (representing the secretaries) and F. E. Jackson (transfer secretary).

The chairman, in moving the adoption of the directors' report and accounts, said: The directors' report and audited accounts for the year ended December 31, 1922, which have been in shareholders' hands for some time, are now submitted for adoption.

A comparison of the results of the mining operations for the past year with those of previous years would, owing to a large number of new factors, be misleading. First of all, there was the strike and revolt which occurred at the beginning of the year, entailing, apart from loss of revenue at a time when gold was higher than during the other months of the year, a direct expenditure of £138,698. Secondly, the average price realised for gold was 14s. lower than for 1921, and on the large output of 394,302 fine ounces this decrease in the price represented a sum of £276,011.

Another factor was that it was not until late in June, after the other mines got a sufficient number of natives, that the depletion in the native labour force which took place during the strike was made good. Randfontein is laid out and equipped to deal with large tonnages of ore, and owing to the narrowness and steepness of its reefs has not the latitude in respect of the employment of machines in stoping enjoyed by other mines. Therefore an adequate native labour supply is essential, and any shortage of natives is at once reflected in the output. However, during the latter months the position in this respect was considerably easier, and there is good reason to hope that the mine is now more popular with natives and that in the future, apart from any general shortage of labour, although the mines on the Far East Rand will always attract natives in preference to Randfontein, we shall be able to obtain a sufficient supply to keep the mill running to its full capacity.

Year of Great Progress.

The year under review was one of great progress in the history of the company. The two deep-level shafts were brought into commission, the new system of stoping which has proved an entire success was established, and on the termination of the strike it was possible to reorganise the underground work, with the result that there was a marked improvement in the efficiency throughout the mine. These factors are reflected in the working costs of the last quarter of the year, when on an output of 510,000 tons the costs worked out at an average of 20s. 4d. per ton crushed—a decrease of 7s. 4d. per ton as compared with the working costs for the corresponding quarter of 1921.

Working profit, together with sundry revenue, for the year amounted to £343,988. The interest and redemption of debentures on the issue made by this company, which is entirely owned by the Randfontein Estates, amounted to £261,202. There was in addition £58,344 interest on the loan from the Randfontein Estates Company. Further, there was capital expenditure to the amount of £206,643, and in addition the direct cost of the strike, so that the result was that at December 31, 1922, your company owed the Randfontein Estates Company £1,399,000, as compared with £1,120,000 at the beginning of the year. The company has now commenced repaying this loan, and a substantial reduction in the amount should be effected before our next meeting.

Turning to the results of the past four months, 712,000 tons—an average of 178,000 tons per month—were crushed at a cost of 20s. 4d. per ton, and resulted in a profit of £112,662. We anticipate crushing over 190,000 tons this month, and very shortly, when certain improvements have been completed at the Central mill, the monthly crushing will be 200,000 tons. There is no doubt that the position of the mine, both underground and on the surface, has materially improved since we met last year, many difficulties have been surmounted, and we are justified in looking with confidence to the future. An enormous concern like Randfontein, on which are employed approximately 1,200 Europeans and 17,600 natives, is a great factor in the welfare, not only of this community, but of the whole of South Africa, but it is dependent to a very large extent on a constant and adequate labour supply and, with its very narrow margin of profit, on low working costs and the efficiency of every person employed.

Development was practically confined to the latter half of the year after the supply of natives became plentiful, and the total footage developed amounted to 39,452 feet. Of this footage 19,675 feet were sampled and 11,690 feet were payable, having an average value of 18·7 dwts. over 20 inches of reef.

Big Ore Reserves.

The ore reserves, which were recalculated at the end of the year, were estimated at 1,271,000 tons, of an average value of 6·5 dwts. over 18 inches of reef, and included 139,800 tons of Battery reef of an average value of 6 dwts. over 53 inches of reef. Development of the Battery reef continues to be most satisfactory. The opening up of this section means the establishment of a new outcrop mine, and at the present rate of development we shall soon be milling a largely increased tonnage from this source.

During the past month Block "A" shaft caved, and, although this shaft was being used principally for ventilation, yet numbers of natives used it as a ladderway to the workings, and it is regretted that the accident resulted in the death of 23 natives. An inquiry was held as to the cause of the disaster, and the finding given was to the effect that no blame was attributable to anyone. The accident proves how necessary it was to sink two deep vertical shafts and to completely reorganise the methods of development and stoping. Had this not been done, the mine would have closed down before now.

We have had a long struggle since we assumed control. Enormous sums of money have been spent, but the mine has now been established on a permanent footing, and we may look forward to a long period of prosperity.

I now beg to move that the report and accounts for the year ended December 31, 1922, as submitted, be adopted.

Question About Policy.

Mr. Mann asked: Why did the Randfontein Central crush 1s. per ton below the value of its ore reserves during the past quarter and 2s. 4d. below during the month of April, thus reducing the profit during April alone by £21,000, and when will this policy change?

The Chairman, in reply, stated that the principal reason, as he understood it, was that more and more of the Battery reef was being taken into commission. Then there was a large quantity of ground of what was known as the East Reef, which did not appear in the ore reserves. It was low grade but was quite payable and it helped to keep the mill going. He believed that 13,000 tons had been milled from it in April. These were the two principal factors causing the drop in the grade, compared with the value of the ore reserves.

Mr. Mann: Does that interfere with the ore reserve at all? I take it that it does not.

The Chairman: It means that ore is being sent to the mill that doesn't reduce your ore reserves.

Mr. Mann: When will you be crushing to your ore reserve grade?

The Chairman: It is difficult to say.

Professor Lawn: You cannot, of course, crush to your average grade on all occasions. It would assume you have a complete choice of grade to take your ore from. With the huge tonnage such as you have at Randfontein you cannot do that. It is impossible. Sometimes we are milling below our grade; later on you may be milling above your grade. It is a thing which cannot be regulated; in other words, with the huge tonnage we have there in ore reserves we cannot always first take from where we would like to take it, but we have to take it from where we can get it. Under these circumstances, we cannot exactly regulate the grade to an average.

Mr. Mann: It is to be hoped it will soon improve.

Mr. Goodman seconded the motion for the adoption of the report and accounts, and this was unanimously agreed to.

Mr. Geoffrey J. Joel was elected as a director in the place of of the late Mr. H. A. Rogers, and the retiring directors, Messrs. G. J. Joel and J. Munro, were unanimously re-elected.

Messrs. C. L. Andersson and C. and Mr. H. J. Lamb were reappointed auditors.

Randfontein Estates' Finances Reviewed.

INTERESTS BOUND UP WITH THOSE OF THE CENTRAL—QUESTION OF ABSORPTION DISCUSSED.

The 30th general meeting of shareholders in the Randfontein Estates Gold Mining Co., Ltd., was held on May 28 in the Board Room, Consolidated Buildings, Johannesburg, when there were present Mr. J. Munro (chairman), Professor J. G. Lawn, Messrs. R. L. Innes, S. Ward, F. Mann, J. Phillips, P. Goodman, J. B. Knight, C. P. Burkhardt, C. B. Mallock and T. D. Bell, with F. Hall (representing the secretaries) and F. E. Jackson (transfer secretary).

The Chairman, in moving the adoption of the report and accounts, said:—

The directors' report and audited accounts for the year ended December 31, 1922, which have been in the hands of shareholders for some time, are now submitted for approval and adoption.

The capital of the company, amounting to £3,001,548, remains unaltered, but the liability on debentures was reduced from £1,344,260 to £1,257,560 by the acquisition of debentures to the value of £86,700, this being the ninth instalment due on March 1, 1922. In addition to this purchase, £91,900 worth of debentures have been acquired in respect of the instalment due on March 1 of the current year, and £280 worth of debentures towards the instalment due in 1924.

The interests of the Randfontein Central Company are so linked up with your company that our success depends upon the future of that company, consequently it was necessary during the year further to finance the Central Company to enable it to complete its scheme of reorganisation. The loan, which stood at £1,120,000 at the beginning of the year, was increased to £1,399,000 at the end of December last. The increase in the loan was chiefly due to the interest and redemption of the Randfontein Central debenture issue, which is entirely owned by your company, but in part to interest on the loan. These three items aggregated £319,546.

I am pleased to be able to report that some reduction in this loan had been made at the end of last month, and now that the Central Company is making regular monthly profits, it is expected that the loan will be liquidated gradually. A copy of the reports, balance sheet and proceedings at the annual meeting of the Central Company will be furnished to shareholders, together with proceedings of this meeting.

In consequence of the advances to the Central Company, it was necessary to increase our debt to the Johannesburg Consolidated Investment Company from £35,000 at the beginning of January to £134,895 at the end of the year, but this sum, by reason of the repayments from the Central, has been considerably reduced since the close of the year, and to-day stands at £32,000.

Property Account.

The property account was credited with £914 11s. 6d., being the net proceeds from the sale of 35 stands in the Randfontein Township, and the expenditure on capital account during the year amounted to £454 4s. 1d., representing extensions to the central power station and electric plant, and the sum of £7 upon tree-planting. The other items in the balance sheet speak for themselves, and call for no special comment. Turining to the profit and loss account, it will be seen that the balance brought forward at the beginning of the year, namely, £897,268, was increased to £1,036,715 at the end of the year. This amount is at present not free for distribution, as it has been loaned to the Central Company.

Randfontein Estates v. Robinson.—Judgment in this case was given in favour of the company by the Transvaal Provincial Division of the Supreme Court on May 9. The basis of the amount payable to the company is 47s. 6d. per share, but the exact number of shares involved has still to be settled, so that it is not possible at the moment to name the exact amount which will be payable to the company. An appeal has been entered against this decision.

I now beg to move that the report and accounts for the year ended Deember 31, 1922, as submitted, be adopted.

Mr. C. P. Burkhardt asked the chairman if he could give any indication when a cash distribution was likely to be made.

The Chairman, in reply, stated that they must pay off their creditors before they commenced to distribute cash to the shareholders. Their liabiilty of £134,895 had now been reduced to £32,000. It was possible that before the end of the next month that amount would be reduced to a very small figure, but they could not declare a dividend until all their liabiilties had been liquidated. He could not, therefore, hold out any hope that there would be any distribution for the half-year ended June 30. For the next half-year the result would depend largely upon how they stood with the Central.

Mr. F. Mann asked if the company still was a holder of Langlaagte shares.

The Chairman replied in the affirmative, and said they still held the same number of shares as at the time of taking over control, namely, 103,784

Mr Mann asked if he would be in order if he moved a resolution that these shares be sold at the discretion of the directors within the next six months.

The Chairman suggested that Mr Mann should move it as a recommendation to the Board, which was done

Mr Burkhardt seconded

The Chairman said he would like to point out that it was not always very easy to sell big blocks of shares

The mover and seconder both agreed that that was the case, and that their recommendation was that the shares should be sold when the opportunity arose.

Mr. Mann then said that some years ago the matter was discussed of getting into touch with the debenture holders with the view to amalgamating the two Randfontein companies and so doing away with one of the two administrations Had anything been done in connection with that matter?

The Chairman replied that after the new directorate had assumed control they had evolved a scheme whereby the Randfontein Estates should absorb the Randfontein Central That scheme was sent forward to London and was approved by the London committee; but, as the shareholders doubtless knew, most of the debentures were held in London. The London committee had endeavoured to get into touch with debenture holders, but they ascertained that it was practically impossible to get the necessary representation at any meeting of debenture holders owing to the very large proportion of bearer debentures in issue. The debenture conditions also provided for a considerable majority in the matter of voting.

Mr. Mann: Three-quarters. But has nothing been done to get into touch with them since then?

The Chairman replied that nothing further had since been done, and reminded Mr. Mann that the original scheme could not, in any case, be put through to-day, owing to the changes which had taken place in the relative values of the shares of the two companies, but the principal difficulty of getting the large majority of the debenture holders necessary together in general meeting still remained. At the time mentioned the debenture bogey was in front of them, and that bogey was there still

Mr. Mann asked where the Randfontein Central shares principally were held

The Chairman replied that nearly 3,000,000 were held by the Randfontein Estates Company, and the others in London or on the Continent Very few Randfontein Central shares were held here by private shareholders.

Mr. Mann asked why the directors could not issue second debentures and buy out the Central. It would be a first-class investment for the Estates Company to buy these shares at 14s. or 15s He was of opinion that the shares were held in a little corner and were not scattered all over the place

The Chairman said the suggestion if carried out would postpone the payment of dividends, but the matter would be mentioned to the people in London—who were the only people who really could do anything—to see what they could do.

Mr Mann also asked that a plan of the property be issued with the annual report

Professor J. G Lawn, consulting engineer, said that would be done next year The preparation of a plan for the first time was a rather lengthy process, but in subsequent years it would not be difficult to bring it up to date.

The motion for the adoption of the reports and accounts was seconded by Mr F Mann, and on being put to the meeting was carried unanimously.

The retiring director, Mr. J Munro was re-elected, and the retiring auditors, Messrs. C. L. Anderson and Co. and Mr. H. J. Lamb reappointed.

New Primrose Continues Operations on a Narrow Margin.

SUCCESSFUL RECLAMATION WORK—DIVIDEND OF 5 PER CENT.

Mr. J. Munro presided at the annual general meeting of shareholders in the New Primrose Gold Mining Co., held in the Board Room, Consolidated Building, Johannesburg, on May 29, when there also were present: Professor J. G. Lawn, Messrs. F. L. Marx, R. L. Innes, E. Brayshaw, F. E. Jackson and J. Butcher, with F. Hall (representing the secretaries) and F. E. Jackson (representing the transfer secretary).

The Chairman, in moving the adoption of the directors' report and accounts, said: "The directors' report and audited accounts for the year ended December 31, 1922, which have been in the hands of shareholders for some time, are now submitted for adoption. Your company suffered very severely from the effects of the strike and revolution in the early months of the year and the heavy fall in the price obtained for gold during the year as compared with 1921. The quantity of ore crushed amounted to 189,400 tons—a decrease of 67,300 tons on the previous year's tonnage. The working profit amounted to £14,318, but after adding revenue from rents and interest, amounting to £1,997, and deducting the expenditure incurred in connection with the strike of £14,263, and sundry payments for income tax and employers' tax, etc., totalling £3,286, there was a net loss for the year of £1,234. In view, however, of the balance of £35,642 brought forward from the previous year, your directors felt justified in declaring a dividend of 5 per cent., which absorbed £16,250, which was paid to shareholders registered at December 30 last, and left a balance of £18,158 to be carried forward to the current year. The operations of the past four months have resulted in a working profit of £8,192, from a tonnage output which has averaged 20,725 tons per month.

Native Labour Outlook.

"When normal conditions obtained, after the termination of the strike, the supply of native labour continued plentiful throughout the year, and it is only during the past few weeks that there has been any appreciable falling off in the supply. As the New Primrose is entirely a reclamation mine, and dependent on hand labour, any depletion in the native labour force is immediately reflected in the output The ore reserves are practically exhausted, but work on reclaiming over a wide range of workings is being carried on, and, although the mine is being worked on a very narrow margin of profit, which adverse circumstances might easily convert into a loss, shareholders may rest assured that mining operations will be carried on as long as the balance of the working account can be kept on the right side I now beg to move that the reports and accounts for the year ended December 31, 1922, as submitted, be adopted

Mr. F. L. Marx seconded, and the motion was agreed to unanimously. The retiring directors, Messrs. G. J. Joel and S. B. Joel, were unanimously re-elected, and the retiring auditors, Messrs. F. W. Diamond and English and Mr. A. E. Page, reappointed.

The Outlook for the New Kleinfontein.

LOSS ON LAST YEAR'S WORKING—CAUSES OF THE SET-BACK ANALYSED—FURTHER ECONOMIES SOUGHT.

At the twenty-seventh ordinary general meeting of shareholders of the New Kleinfontein Company, Ltd., held in the Board Room, National Bank Buildings, Simmonds Street, Johannesburg, on the 25th May, the Chairman, Sir Wm. Dalrymple, K.B.E., said:—

Gentlemen,—The reports of the directors and the accounts for the year ended December 31, 1922, are before you for your consideration, and before moving that they be adopted I will first deal with the accounts and thereafter briefly review the operations of the company for the past financial year.

The revenue from gold was £475,938 as compared with £833,803 for the previous year, a decrease of £357,865, due in some measure to the falling off in the price obtained for the product, but principally to the decrease in tonnage milled brought about by the strike of European employees to which I referred at our last annual meeting.

Operations at the mine show a loss of £31,210, to which must be added the following further expenditure:—

Loss (as above)		£31,210
French taxes	£590	
Interest	7,448	
Reserve for depreciation in stores	5,000	
Ex-enemy shares purchased	12,584	£25,622
		£56,832
Less rental of Apex reduction plant		18,242
Leaving a net decrease of		38,590
in the balance unappropriated and leaving		168,221
to be carried forward, which is made up as follows:—		
Cash and gold unrealised after providing for sundry creditors		£90,200
On fixed deposit and in Union of South Africa Treasury bills		24,468
Stores and materials		46,850
Sundry debtors		11,451
Payments in advance and suspense accounts		3,829
Shares and investments in co-operative concerns		9,631
Sundries		642
		£190,071
Less amounts to credit of reserves		21,850
		£168,221

The balance of stores on hand shows a reduction of £20,000 included in which is an amount of £5,000 written off the values of certain spare parts of machinery purchased chiefly during the war in order to ensure the continuity of operations in that uncertain time, and which if disposed of would not now realise the original purchase price.

Purchase of Shares.

Another item calling for special mention is the purchase of shares in the company formerly held by ex-enemies. The custodian of Enemy Property offered for sale to companies shares held by him on behalf of ex-enemies. Your directors, after going into the whole question very closely, and with the consent of the bondholders, decided to acquire all shares in this company so held by him. At the close of the year we had purchased 106,243 of these shares, which appear in the accounts as an asset, and are shown at cost price; hence the total share capital in the possession of the public is £1,045,297.

It has been suggested that these shares should be distributed among shareholders as some solatium for the absence of dividends during recent years. The board, however, consider that such a course would be undesirable. It is true that if shareholders were permitted to acquire the shares at cost price (about 2s. 4½d.), as has been done in the case of some companies on these fields whose circumstances are entirely different from ours, a handsome profit to the shareholder would be indicated when the present market price is considered, but it must be remembered that the effect of such a distribution would be to bring a very large number of shares on the market in small lots during a period of financial stringency, which, in our view, would not be in the best interest of shareholders, and in addition the cost of effecting such a distribution among the 7,633 shareholders in the company would be out of all proportion to the amount distributed.

Deed of Trust.

The shares are held for the company in the names of two directors who have executed a deed of trust, under which it is specifically provided that the shares in question carry no voting power.

In consenting to the transaction, the bondholders stipulated that the amount of the bond should be reduced by an amount equal to the sum paid to the Custodian for the shares. Capital loan account shows a reduction of £11,714 due to re-payments to the bondholders on this account, and capital reserve shows a similar reduction.

Col. Sir. Wm. Dalrymple, Chairman of New Kleinfontein.

A sum of £18,242 6s. 3d. was received from the Modderfontein East, Ltd., as rent for the Apex reduction plant.

Referring now to the operations at the mine, the total footage driven, risen, and sunk was 5,090 feet, a reduction of 4,662 feet, due to the stoppage of operations during the strike period, and to flooding and dislocation underground for some time thereafter, and also to the fact that as the development of the eastern section nears completion there are fewer points of attack available. No shaft sinking was done during the year.

The footage developed on the reef was 3,014 feet, of which 36·8 per cent. was payable, and gave an average value of 7·03 dwts. over a stoping width of 60 inches.

The ore reserves, which for the sake of uniformity have again been calculated on the pre-war limit of 3·76 dwts., were estimated at 1,208,655 tons, having an average value of 5·19 dwts. over 57·62 inches, as compared with 1,325,333 tons, having an average value of 5·18 dwts. over 56·65 inches for the preceding year.

Benoni Section of Mine.

At our last two annual meetings I have dealt with the results of development in the Benoni section of the mine. Interest is still concentrated around Nos. 4 and 5 shafts, where work has been steadily advanced towards the west; and with the object of expediting development work the engine in No. 5 shaft is being converted for electric driving and the shaft is being equipped.

Since the close of the year the 12th and 14th drives west of No. 5 shaft have been pushed forward, and winzes have been sunk from the 14th level between Nos. 4 and 5 shafts.

Th 12th level drive has shown ore of fair value, and a winze is now being sunk from it to connect with the 14th level. A rise has also been put up to the 11th level, which is now in course of preparation for stoping. The stope value should be about 8 dwts. over 60 inches.

The 14th level drive has passed through a large dyke beyond which the reef, although of considerable width, is unpayable.

The equipment of the shaft should be completed by the end of June. This will enable development work to be conducted from some of the upper levels to the west of the shaft, and will also permit of stoping out the blocks which are now standing, some of which are of fair value.

The tonnage milled was 412,580 tons, compared with 581,060 tons during 1921, and the recovery values were 5·12 dwts. and 5·47 dwts. respectively .

The output was 105,633 ounces of fine gold, as compared with 150,010 ounces for the previous year, the average price obtained after providing for realisation charges being £4 10s. 1·3d., as compared with £5 4s. 10·5d. last year, while working costs were £1 4s. 7d. per ton milled, as compared with £1 6s. 5·5d. for 1921.

Heavy Cost of Exchange.

Had we been able to secure the 1921 price for our gold, while retaining the advantage of cheaper costs which resulted from the reorganisation following the strike, our working loss of £31,210 would have been convrted into a profit of over £45,000, notwithstanding the losses of the strike, and had we obtained the standard price only—other conditions remaining the same—our loss would have been increased by £37,000.

The heavy cost of exchange levied by the banks in connection with the transfer of funds from London in order to meet expenditure on this side is a burden which the mines have been called upon to carry during recent years. This exchange has cost your company no less than £7,021 during the period under review.

The miners' phthisis levy is also a severe tax on your company's revenue, the cost for last year being £14,204.

The Municipality of Benoni also takes its toll from the company in the shape of assessment rates and charges for essential services. These in all amount to £5,292 per annum, and in so far as the essential services are concerned—amounting to over two-thirds of the total—the company, were it permitted to do so, could carry them out on its own account at about one-third of the cost.

Items of Expenditure.

In order to show the incidence of certain heavy items of expenditure which are largely beyond the control of the management, the following analysis of the year's costs is given:—

	Cost	Per fine oz	
	£	s.	d.
White wages	124,779	23	7·5
Native wages	129,825	24	7·0
Stores	167,831	31	9·3
Other expenditure	84,714	16	0·4
Made up of Miners' phthisis compensation, £14,204; native labour importation and passes, £11,773; municipal rates and sanitary services, £5,292; life, fire, and riot insurance premiums, £5,468; electric current from Kleinfontein Power Association, £12,665; claim licences, £6,266; contribution to Miners' Phthisis Sanatorium, Training School, etc., £2,449; head, London, and Paris office expenses including directors', secretarial, consulting engineer's and auditors' fees, printing, stationery, cables, etc., £11,085; sundries, £15,512—£84,714			
	£507,149	96	0·2

In my remarks at the annual meeting of shareholders held on May 26th, 1920, I made reference to negotiations which were proceeding with the Brakpan Mines for that company to drive one of their levels into the Apex section of the company's property. At the time it was found that for technical reasons in connection with their own mining work the Brakpan Mines could not undertake the work for us.

I am glad to state that these difficulties have now been removed, and we have practically concluded an agreement whereby that company will carry its 13th level into our ground in order to test a section of the Apex mynpacht which is situate far below the horizon of any workings which we had opened up through our own No. 7 shaft. In this way we hope to obtain a knowledge of conditions in the deeper portions of this part of the property, and our thanks are due to the Brakpan Mines for their courtesy in giving us facilities to do so.

Last year I informed you how the strike of employees and subsequent revolution affected your company, and I need not, therefore, reiterate the depressing story; the accounts before you are sufficient evidence of the disastrous effect of the strike on your company's operations.

Complete Vindication.

On the conclusion of the revolution in March, 1922, the Government appointed a Commission to investigate the causes of the strike and subsequent events, and it is satisfactory to know that the findings of the Commission were a complete vindication of the attitude of the mining industry towards its employes.

A shareholder has requested that a plan of the workings should be issued with the annual report this year. This is a big undertaking and a costly one, and could not be done in the time at our disposal before the despatch to the shareholders of the proceedings of this meeting. The suggestion, however, will be borne in mind, and the Board will take into consideration the issue of a plan to accompany next year's annual report.

Looking at the present position of the company, and reviewing the results obtained from the date of our last meeting and comparing them with those prior to the strike, we find that we have brought about a decrease of about 4s. 6d. to 5s. per ton in our working costs, but with a falling grade and falling price for our product, this is proving insufficient to ensure the continuity of profits. For some months past the price which we have obtained for our gold

Box 3807. **Tel. 5892.**

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

has fallen, and at present it stands at 89s. 7d., as compared with 95s., which was approximately the price on the resumption of operations after the strike last year.

Fluctuation of Gold.

It is, of course, impossible to foretell future fluctuations in the price of gold, but to the best of my knowledge there is at least no reason to anticipate any radical increase, but rather the reverse. If, therefore, we are to continue as a producing company, it is necessary that we should form our estimates on the basis of the standard price of gold, and, while we fully appreciate what has been done up to now in the matter of economies and reductions in working costs, we must still bring about further substantial reductions.

At the close of our meeting last year I impressed upon shareholders, and I hope also on the employees of the company, who were afforded full opportunity of reading my remarks, the precarious position in which the company then found itself. I also touched upon the immense benefit to South Africa, and especially the Witwatersrand, which was derived from keeping open the low-grade mines on these fields, which, as in the case of your company, have for some time past been on the verge of non-payability.

Another year has passed, and the company finds itself at the end of that time in a worse financial position than at the beginning, owing to having to recover the strike expenditure, which was assessed at about £70,000. As far as mortal man can see, there is no prospect of any substantial increase in the grade of your development. The price of gold, as I have already stated, has been on the wane throughout the year, and although fluctuations must occur no great recovery can be expected. It follows, therefore, that our only hope lies in the reduction of working costs.

The March Disaster.

This company has throughout its history been very free from accidents in the mine, but I regret to report a disaster on March 31 last, resulting in the death of two Europeans and eight natives. Without any warning, several thousands of tons of rock came down between the eighteenth and twentieth levels, entombing the men and resulting in their immediate death. Our deepest sympathy is extended to the relatives.

The work of recovering the bodies was carried on under very difficult and hazardous conditions, and everything humanly possible was done by willing rescue parties under the supervision of Mr. Harding, your manager, and Mr. [illegible], the underground manager.

When the seriousness of the accident was first realised, the managements of neighbouring mines offered any assistance in their power, and individual offers from experienced men both on our own property and on those adjoining us poured in. To all who volunteered for this extremely dangerous work we are deeply grateful.

I regret to have to report the death of one of your directors, the late Mr. William Ross, who was a director and was closely associated with your company's affairs since [illegible]. The vacancy on the board caused by the death of Mr. Ross has not been filled.

It gives me pleasure to record the board's appreciation of the services rendered by the manager and staff of the mine, and I trust that during the coming year their efforts at further reductions in our working costs will meet with success.

I now move that the report and accounts for the year ended December 31, 1922, be adopted.

This was seconded and adoted.

The retiring directors were re-elected and the auditors reappointed.

In bad times, when you cannot afford a whole-time draughtsman

Have your

DESIGNS—DRAWINGS—TRACINGS,
Electrical, Mechanical, Structural, Architectural, Etc.,
Prepared by
JAMES S. HOEK, A.M. (S.A.) I.E.E., M.S.A.A.D.
(late of the Corner House).
Office: 63 Cuthbert's Buildings. P.O. Box 1539, Telephone 4138, Johannesburg

Industrial Conciliation.

SELECT COMMITTEE'S AMENDMENTS TO BILL.

Several additions and amendments have been made by the Select Committee to the Industrial Conciliation Bill. The number of clauses has been increased from 17 to 29 and the scope of the Bill has been extended to secure the prevention as well as the settlement of industrial disputes. Further, the regulation, as well as providing for the registration of trade unions and private registry offices, which come within the operations of the Bill, provides for the compulsory registration of employers' organisations.

At the outset the Bill has been made applicable not only to every trade and occupation, but also to every industry, and the following important addition is made: "If any number of persons employed in any department of the Government in any undertaking, industry, trade or occupation is, with the approval of the Minister of that department, a party to or is represented upon any industrial council or like body existing for the consideration and regulation of matters of mutual interest to employers and employees in that undertaking, industry, trade or occupation, or the prevention or settlement of disputes between them, such persons and any other persons so employed in that department may, with the approval of the Minister, be a party to or be represented upon any industrial council established under the Act."

Industrial Councils.

Chapter 2 of the Bill has been altered beyond recognition. Instead of two brief paragraphs providing for the establishment of conciliation boards, there are four pages devoted to the establishment and registration of industrial councils. Any employer or association of employers may agree with a registered trade union or group of registered trade unions for the establishment and registration of industrial councils. Any employer or association of employers may agree with a registered trade union or group of registered trade unions for the establishment of an industrial council for the consideration and regulation of matters of mutual interest to them, and the prevention and settlement of disputes between them. These councils will consist of an equal number of representatives of employers and employees. If both parties to any dispute which is under the consideration of any industrial council or conciliation board established under this Act apply to the Minister for the appointment of a mediator in respect of such dispute, or if the Minister is at any time satisfied that the settlement of any matter by any industrial council or conciliation board can be assisted thereby, he shall appoint a person to be mediator in respect of such dispute.

An industrial council or a conciliation board may agree to abide by the decision of one or more arbitrators for the determination of a dispute, and upon receipt of any such request the Minister shall make the appointment. When any award is made by an arbitrator the terms of the award shall be binding on all parties represented on the industrial council or conciliation board which has agreed to the appointment of the arbitrator, and any person who is bound thereby who shall fail to accept or to carry out such award shall be guilty of an offence. When in any matter relating to any undertaking, industry, trade or occupation, which has been under the consideration of the industrial council or conciliation board, the parties make application to the Minister for a declaration by him that any agreement arrived at shall be binding upon the parties thereto, or shall be extended to other employers and employees within any area in that undertaking, industry, trade or occupation, the Minister may do so if he deems it expedient.

Whenever the decision or report of an industrial council, conciliation board, mediator or arbitrator under the Act has been given, it shall be unlawful for any employer affected by the matter in dispute to declare any lock-out of employees because of any matter which was a subject of the dispute until a ballot shall have been taken of all employers affected by the dispute within the area in which it has taken place, to ascertain whether such employers are in favour of a lock-out or alteration, as the case may be.

Position and Prospects of Rand Mines, Limited.

CHAIRMAN'S REVIEW OF THE MAIN FEATURES OF PROGRESS DURING THE YEAR.

At the annual meeting of the Rand Mines, Ltd., held on May 25, Mr. F. R. Phillips (chairman) presided and said:—I will first deal with the company's accounts which are before you, comprising the balance sheet, profit and loss account and appropriation account.

The balance sheet discloses the following alterations as compared with 31st December, 1921. On the debit side, reserve account shows a decrease of £133,367, due to:-

(a) Funds transferred to appropriation account, being net amount released from investments £66,199
(b) Depreciation written off £67,168

This account now stands at £2,128,542, and represents the total profits re-invested in the undertaking. The liabilities of £544,233 are a set-off against the cash on hand, so that it is not necessary to make any comparison here. The balance of appropriation account shows an increase of £342,711, standing at £842,135, and represents the amount of cash and cash assets on hand after providing for all liabilities. Practically the whole of this sum is in the form of liquid cash.

On the credit side, investments show a decrease of £133,367, due to the difference between realisations and purchases for the year, together with depreciation written off.

The total net amount of the company's assets, as shown in the balance sheet, after deducting outstanding liabilities, is £3,502,177, of which £703,086 is actual cash, as against the value in the 1921 balance sheet of £3,292,832, of which £286,862 was in the form of cash. Whilst there is an increase in the balance sheet value of the assets of £209,345 for the year, the actual cash position is improved by £416,224.

In connection with the balance sheet value of our assets, it must be remembered that the principle we always adopt is to take in investments at cost, and when such cost is above market value to write off the difference. The result is that our balance sheet is in no sense a valued one, and it will be apparent to any shareholder who cares to calculate the value of our chief investments, that they stand in the company's books at a figure very much below their market value.

Income and Expenditure.

The profit and loss account shows a profit of £800,620 for the year, being an increase of £263,071 after allowing for the different method of treating Government taxes, through appropriation account. On the same basis, there is a decrease of expenditure on the debit side of £15,910 under the headings of administration expenses, prospecting and other ventures, and bad debts reserve. On the credit side, dividends on shareholdings show a decrease of £110,913. Reservoirs, interest and exchange and sundry revenue show an increase of £8,140. Investment realisation account shows an increase of £349,936. The cause of the decline in our receipts from dividends is chiefly in consequence of the lower dividends paid by the gold mining companies in which we are interested, owing to the cessation of their operations during the prolonged strike of mine workers at the commencement of the year under review. The improvement in the profit from realisation of investments is due to the board having taken the opportunity of realising some of our holdings in order to strengthen the company's cash position.

It is not necessary for me to refer here to any of the items in the appropriation account, except to state that two dividends, totalling 100 per cent., were declared for the year, being an increased distribution of 30 per cent.; that these dividends absorbed £512,537 15s. 0d., and that the book value of the investments sold last year was, when taking into account the purchase money of ex-enemy shares, entirely re-invested, with the exception of £66,199.

Ex-Enemy Shares.

At last year's meeting you were informed that the board had acquired approximately 70,000 ex-enemy shares of this company from the Custodian of Enemy Property; the actual number of shares bought to date, however, amounted to 80,841. These shares are being transferred into the names of the trustees on behalf of the company, who have executed a trust deed and an irrevocable power of attorney, and for the present the shares will be retained by the company and dealt with at some future time.

This completes my survey of the report and accounts, and discloses the fact that the board has been successful in its main endeavours during the past year in considerably strengthening the financial position of the company.

With reference to new ventures, your directors are fully alive to the desirability and necessity of exploring further avenues for fresh development. During the past year many propositions with seemingly attractive possibilities were investigated, and a vigorous policy, coupled with reasonable precaution, is being pursued.

I will now review briefly the operations of the various companies in which we are interested.

You are aware that last year the gold mining industry on the Witwatersrand was practically at a standstill for three months owing to the strike of mine workers and revolution which it brought about. As stated in the report, it was not until the middle of the year that the gold mines were able to resume operations on a normal scale. Apart from the long period during which these companies could not earn profits, heavy losses in keeping the mines open and in maintaining their organisations were incurred.

Mr. F. R. Phillips, who presided at the annual meeting of Rand Mines, Ltd.

As a result of the strike, a reorganisation of underground work was effected, which has produced a marked increase in efficiency and a reduction in working costs amounting to about 5s. 8d. per ton for the last half of the year compared with the average for 1921. The fall in the average price of gold during 1922 as against the average price in 1921, amounting to 15s. 1d. per fine ounce, was a material factor in offsetting the reduced costs, as it is equivalent to a reduction in revenue of 4s. per ton. These factors make it impossible to draw any correct comparison between the two years.

In the report now before you will be found a table which gives the salient features of each of these companies' operations, such as tons milled, recovery value, profits earned, dividends declared, payable ore reserves and value, etc., etc.

Reverting now to the Witwatersrand gold mining industry, there was naturally a considerable reduction during the past year in the working results of the various companies whose affairs are administered by the Central Mining-Rand Mines Group, due to the strike and consequent depletion of the native labour force during the first half of the year under review. I do not propose to labour this point beyond giving you some comparative figures for the years 1921 and 1922 as follows:—

	1921.	1922.
Total tonnage milled	11,571,030	9,592,620
Yield per ton milled (average)	6·657 dwts.	6·846 dwts.
Total value of gold produced	£20,261,249	£14,871,560
do. (at standard price)	£16,175,951	£13,853,418
Price of Gold realised (oz.)	105 3	90 2
Total working expenditure	£15,363,936	£11,504,433
Working costs per ton milled	26 6·6	23 11·8
Total profit earned	£4,897,313	£3,367,127
Dividends distributed	£4,878,243	£2,566,001

Spent in:—

	1921.	Per ton milled.	1922	Per ton milled.
White wages	£4,706,939	8 1·6	£2,543,208	5 3·6
Coloured wages	2,648,658	4 6·9	2,467,498	5 1·7
Stores and materials	5,044,799	8 8·6	3,879,334	8/1·7
Other costs	2,770,441	4 9·4	2,429,798	5 0·8
Head office expenses	193,099	0 4·1	184,604	0 4·6
	£15,363,936	26 6·6	£11,504,433	23 11·8

These figures speak for themselves and clearly show the price paid by the business world, investors and the wage earners for the dislocation of the industry as the result of the strike.

The unequivocal finding of the Mining Industry Board appointed by the Government last year to enquire into and report upon the recommendations put forward by the industry, is confirmatory of the equitable treatment of employees by the various mining companies. Very full extracts of the report of this Commission have been published in the press, and although certain political sections are attempting to discredit the board and its report, I am sure that everyone who has taken the trouble to analyse it in conjunction with the problems with which the mining industry is faced, must agree that the main conclusions of the board are sound and impartial. Once again the view is expressed that it is economically impracticable to employ white unskilled labour in substitution for native labour, and the Commissioners were satisfied that prior to the strike the mines were burdened with a considerable number of redundant and inefficient men.

Since the resumption of normal production and the removal of the endless interferences with managerial authority on the part of trades union officials, more particularly of shaft and shop stewards, real progress has been made in the re-organisation of underground working conditions and a marked increase in efficiency is already apparent.

The working costs of the companies in which we are interested have in nearly every instance shown an improvement. You were told at the last annual meeting that there were encouraging signs of recovery of the industry to more normal conditions. These have happily eventuated and the actual result, so far as we are concerned, can be readily seen from the following comparative table:—

COMPARISON OF WORKING COSTS—JULY TO DECEMBER, 1921 & 1922.

	For six months July-December, 1921		For six months July-December, 1922	
		Per Ton Milled.		Per Ton Milled.
Tons milled	5,955,370		6,296,138	
White wages	£2,350,555	7 10·7	£1,456,259	4 7·5
Coloured wages	1,344,961	4 6·2	1,378,966	4 4·6
Stores and materials	2,528,708	8 5·9	2,346,186	7 5·4
Other costs ..	1,394,098	4 8·2	1,308,945	4 1·9
Head Office expenses	94,427	3·8	91,035	3·5
	£7,712,749	25 10·8	6,581,391	20 10·9

A comparison of the working costs for the last six months of 1921 and 1922 shows that white wages were less by 3s. 3·2d. per ton milled, and this has not been attained at the expense of efficient service. On the contrary, the relative production per employee, both white and native, has materially increased. I can best demonstrate this by means of the following statement showing the results for the last four months of 1921 and 1922 of twelve of the mines administered by our group. I have excluded the figures of the Robinson Gold Mining Company, Limited; Ferreira Deep, Limited; Knight Central, Limited; and Modderfontein East, Limited, for the reason that the working conditions of these companies were abnormal and a fair comparison could not therefore be made.

	September to December 1921	September to December 1922	Differences. 1922	%
Ounces of gold recovered	1,173,556	1,301,877	+ 128,321	+ 10·9
Cost per ounce	75·5	60·5	— 15·0	— 19·9
Average number of whites working				
Surface	3,915	3,443	— 472	— 12·1
Underground	**4,697**	**3,705**	— 992	— 21·1
Total	**8,612**	**7,148**	— 1,464	— 17·0
Average number of natives working				
Surface	13,133	14,302	+ 1,169	+ 8·9
Underground	**56,243**	**57,551**	+ 1,308	+ 2·3
Total	**69,376**	**71,853**	+ 2,477	+ 3·6
Development footage	87,159	104,447	+ 17,288	+ 19·8
Tons mined	3,816,902	4,248,260	+ 431,358	+ 11·3
Tons milled	3,447,736	3,786,666	+ 338,930	+ 9·8
Waste sorted on surface	380,186	484,081	+ 103,895	+ 27·3
Do. do. Percentage	9·96	11·39	+ 1·43	—

If we examine these figures for a moment it will be seen that with 992 fewer whites employed underground and 1,308 additional natives, the development footage was increased by 17,288 feet, and there was an increase of 431,358 tons in the tonnage mined. This illustrates the point so often made that the capacity of our white workers had fallen to a low standard and that they were capable under altered conditions of giving more efficient service.

Further Working Cost Reduction Necessary.

It is still imperative that substantial reductions in the working costs of many mines should be made in order to meet the progressive fall in the price of gold, and allow of the working of the vast quantities of low grade rock, which, although developed, cannot even under present circumstances be worked at a profit. The desired reduction can only be attained by increased efficiency and co-operation, and improvements in methods of working, and these problems are receiving the closest attention by all departments concerned.

During the past year particular attention has been devoted to the question of stores consumption. The amount expended by the mines of our group for stores and materials during 1921 amounted to £5,044,799, or 8s. 6d. per ton milled. For the six months July to December, 1922, the cost had been reduced to 7s. 5·4d. per ton milled, and provided there is no general increase in prices, it is hoped that further reductions will be made.

Engineering Research.

Important investigations are being made by our electrical and mechanical engineering department on the consumption of air and electric energy underground, and it is anticipated that the practical application of successful experiments conducted by this department in connection with rock drilling and other methods of underground work will be conducive to increased efficiency and economy. Investigations are also being made in connection with the specification and gauging of drill steel, with the object of reducing the consumption of this commodity, which forms a considerable item of expenditure. Savings on this particular item will also be effected, it is hoped, by use of new types of furnaces recently designed for the sharpening and hardening of drill steel.

In our metallurgical practice distinct advances have been made in various directions, the most important of which are:

1. The elimination of amalgamation plates in reduction plants.
2. Increased precipitation efficiency due to the deaeration of gold-bearing solutions.

The primary aims in connection with the first named improvements were, the safety of workers by the elimination of mercurial poisoning and a reduction of gold thefts. The success of the elimination of amalgam covered copper plates and substitution by corduroy covered tables has now been proved by experience, and has already been adopted by a number of mines. This change will effect a direct saving in labour and stores amounting to approximately 1d. per ton milled, in addition, the quantity of gold in circuit is greatly reduced; in consequence the company is able to realise much more promptly the gold extracted from the ore.

The Crowe de-aeration process has had the effect of lowering reduction costs by between 1d. and 2d. per ton milled by reducing the quantity of cyanide and zinc consumed; an increased precipitation of efficiency is also obtained.

Health Conditions.

The health conditions on the gold mines of the group continue to improve, and the results last year were gratifying. The accident death rate of the group's native labour force was 2·39 per 1,000, which constitutes a fresh record, and is only ·14 per 1,000 above the figures for the whole of the Witwatersrand for the nine working months of 1922. The death rate from all diseases amongst natives dropped from 11·18 per 1,000 to 9·76 per 1,000—a most satisfactory result of the efforts of our compound and hospital staffs and the scientific application of the most modern and advanced medical and hygienic methods for safeguarding the health of the natives in our employ.

Put in another, and possibly more appreciable way, the net results of these improvements is a saving of nearly 250 lives to the group, while the number of working shifts gained to the mines of the group was:—

From accidents	123,737
Disease	39,899
Total shifts gained	163,636

Legislation.

The ingenuity of the Transvaal Provincial Council in devising fresh means for taxation found scope last year by the introduction of yet another penalising measure designedly directed against the industry. By the Employers' Tax Ordinance a levy of £1 per annum on all European and native employes was made, which produced to the revenue of the Provincial exchequer a sum of no less than £58,511 from this group alone. Relief was sought against this impost, but the powers of the Provincial Council, in opposing this additional burden on the mines were upheld by the Appeal Court.

Miners' Phthisis.

Fresh legislation is again proposed to be enacted on this industrial disease, which will largely increase the mines' liability for compensation, and which to-day is on an unprecedented scale and far in excess of compensation provided by other laws for industrial accidents and diseases, both in this and other countries. Evidence is not lacking to show that conditions with regard to dust prevention have steadily improved each year. Large amounts have been and are being expended by the industry in the endeavour to eliminate the chances of incurring the disease; and it will be interesting to you to know that the annual occurrence of phthisis in its primary and secondary stages amongst white miners on these fields has fallen from 11·79 per 1,000 in 1917 to ·37 per 1,000 last year. The dust content of the underground air which at the time of the first systematic investigation by the Miners' Phthisis Prevention Committee in 1913-14 showed an average of 5·4 milligrams per cubic metre, was reduced at the time of the last yearly report of the Dust Sampling Committee to under 2 milligrams per cubic metre, or less than is found in the streets of Johannesburg on an average dusty day. Ventilation and water supply underground receives careful and unremitting attention by mine officials. Underground work and blasting have been arranged so that the men are exposed to a minimum amount of smoke and fumes, and compulsory holiday leave on full pay has been introduced to assist underground workers to maintain their health. Despite the endeavours made to make mining as safe as possible, and to assist in the prevention of silicosis by the measures I have mentioned, and also by the inclusion of stringent Government regulations devised with the same object in view, the apathy of a large number of miners in regard to dust is astounding.

There is no doubt that the principle of payment of industrial compensation has been grossly violated in the Miners' Phthisis Acts. Whereas each company should be made responsible for contributions to the compensation fund in relation to its liability for causing phthisical conditions, it is found that the rich company whose dust conditions are possibly better than those of its neighbours is made to bear an increased contribution for the poorer and possibly less well-equipped mines, which have a greater responsibility for the creation of the disease. There are many anomalies in the existing Act which should be remedied as early as possible, and we can only hope that in the consideration by Parliament of the proposed amendments, a just view may be taken of the proposals to ameliorate the heavy financial burdens already borne by the mines in regard to the excessive scale of compensation paid under the present and prior laws.

Rand Refinery, Ltd.

All of the gold output of the Witwatersrand is now treated by the Rand Refinery, Limited. Important savings to the various companies of the group as a result of the introduction of the refining and forwarding arrangements through this institution are anticipated.

Freight on Gold.

The new contract entered into with the Union Castle Company for the carriage of gold to England during the two years ending September, 1924, is based, unfortunately, on even less satisfactory terms than under the arrangement which ended last year. Despite a vigorous protest by the industry the freight rate was increased from 4s. 3d. per cent. to 6s. 6d. per cent., and this, added to the high rate of exchange charged by the banks, constitutes a heavy tax on the gold mining companies in the realisation of their product.

Pretoria Branch of the Royal Mint.

Operations will shortly commence at the Mint, and will at first, I understand, deal only with silver and bronze coinage. It is impossible at this stage to estimate the saving to the mining industry when the time arrives for the Mint to take its gold bullion, but one can safely assume that a portion of the very large sum which is paid to the banks for exchange will be saved, as well as a portion of freight and insurance charges.

Native Labour Supply.

The serious depletion of the native labour force during the period of the strike caused considerable anxiety at the time, but the efforts made to hasten the return of the natives met with a ready response, and by the end of August the position was again normal. We are to-day employing a larger percentage of B.S.A. natives, and the recruiting from Portuguese territory has been restricted to some extent. This policy was agreed to by the Transvaal Chamber of Mines on representation from the Union Government, with the object of relieving unemployment among B.S.A. natives due to the industrial depression in South Africa. But the ample supply of native labour which existed during the end of 1922 is not likely to be permanent, on the contrary, there are signs already of decreased numbers coming forward.

In conclusion, I wish to record the Board's appreciation of the loyal and efficient services rendered by members of our head office and mine office staffs.

Following the strike they were faced with an entirely new set of conditions, and it is largely due to their energy, tact, and ability that we are to-day able to record the marked improvements in the industry to which I have already made reference.

I now beg to move that the directors' report, balance sheet and accounts for the year ended 31st December, 1922, laid before the meeting, be received and adopted.

The report and accounts were duly adopted.

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TOPICS OF THE WEEK.

The Rand Mines Meeting.

In an issue which contains more reports of important company meetings than any other during the year, pride of place must be given to the annual review of the Rand Mines, Ltd. Fortunately we are enabled to print a complete report of the speech of the Chairman, Mr. Frank Phillips, and it only remains here to call attention to some of its more striking passages. The feature of the balance sheet is, of course, the improvement in the cash resources of the company by no less than £416,224. Though the dividends received from the subsidiary companies are naturally smaller, owing to the troubles of last year, the net profits of the parent company are much higher, on balance, due to profits on realisation of investments. In other words, the company took profits in certain lines, in order to strengthen its cash position—a policy with which shareholders can have no cause to quarrel. From the public point of view, it is good to know that "a vigorous policy of exploring further avenues for fresh development" is being pursued. In other words Rand Mines, Ltd., has money available for promising new ventures. Instructive light is thrown on the economy and efficiency question by the tables included in the Chairman's speech. These are eloquent of the change wrought in the last four months of 1922 compared with "the bad old days" just preceding the strike. The figures given should be examined in detail by every serious student of Rand economics. It is sufficient here to state that they show that with 992 fewer whites employed underground, and 1,308 more natives, the development footage on the mines mentioned was increased by 17,288 feet, and there was an increase of 431,358 tons in the tonnage mined. "This illustrates," said the Chairman, with eloquent restraint, "the point so often made that the capacity of our white workers had fallen to a low standard, and that they were capable under altered conditions of giving more efficient service." Put more bluntly, they had "slowed down on the job." The recent improvement shown, however, is not enough to save the situation, and the Chairman declared that further savings all round were imperative to allow of the working of the vast quantities of low grade rock available. The Chairman proceeded to review in detail the savings already effected under the heading of stores, and in the electrical, mechanical and metallurgical departments. In all these directions much has been done, and there is promise of further achievement. Questions of health, legislation and the native labour supply are all succinctly dealt with in the Chairman's speech, and no briefer and more thought-compelling review of the Rand's general conditions has recently been vouchsafed to us. To all these matters we may expect more extended reference at this week's meeting of the allied institution, the Central Mining Corporation, in London. Meanwhile the Rand Mines speech from the chair will give all who are interested quite enough to digest for the moment.

The Barnato Meetings.

Annual meetings of ten important subsidaries of the Barnato Group were held this week, and at all of them the chairman, Mr. John Munro, was able to present a satisfactory statement of affairs. The Government Areas, of course, is in a class by itself, and the past year adds another to its unbroken history of sound and successful management since first the enterprise of its backers was rewarded by good results. The position of the mine to-day is summed in the chairman's word "excellent," and he was able to predict for the property a long and prosperous future. Over ten millions of high grade ore have now been developed, and when the new central shaft, which is making excellent progress in face of difficulties, is completed, the mine will be in an impregnable position. Naturally the shareholders are jubilant and congratulatory, and the directors were asked to consider the question of splitting the shares. The Government, which is doing so handsomely out of this "plum of the Rand basket," is hardly likely to offer any objection, and in due course the directors will doubtless adopt some such scheme. New State Areas, which is handicapped by having to share with the Government an unconscionable percentage of its profits, is making an auspicious start on its productive career. The usual troubles incidental to a new plant—troubles that might be expected to be aggravated in this case by novelties of design—are being successfully overcome. In the chairman's words, the plant promises to be a great success, and the mine is "opening up well." At Randfontein Central the chairman's succinct concluding words describing the position cannot be improved upon. "We have had a long struggle," he said, "since assuming control. Enormous sums of money have been spent, but the mine has now been established on a permanent footing, and we may look forward to a long period of prosperity." Of course the interlocked finances of the Central and the Estates Company are still an unsatisfactory feature, and at the meeting of the latter company the subject was freely ventilated. The chairman gave a very frank explanation of the position, and illustrates the esteem that is in London [illegible] matters out. Another splendid showing is made by the Van Ryn Deep, and at the meetings of the two Langlaagte companies the results of those issues were made, if possible, clearer than before. The fortunate shareholders in these, the best of the [illegible] basket, will doubtless study every line of the chairman's carefully chosen words, and we print verbatim reports of the proceedings in another part of this issue. One leaves from a perusal of these proceedings with the belief confirmed more strongly than ever that the mines of the group are amongst the best managed on the Rand.

Crown Mines & the Currency Question.

The Crown Mines, Ltd., has been much in the limelight of late, and the Chairman's annual review of the position of the mine was therefore anticipated with more than usual interest. From the shareholders' point of view the very clear and concise explanation given by Mr. Samuel Evans will be found to answer all questions and to deal adequately with recent criticisms. Mr. Evans analysed these latter, and showed how slender the bases upon which they rested. Mr. Evans regarded the improvement of a quarter of a dwt. in the yield per ton milled most satisfactory, especially in view of the fact that the bulk of the ore sent to the mill came from stopes which were [illegible] than were being mined in 1914, and also that 20,000 to 30,000 tons per month more were being mined now than in 1914. The unsatisfactory feature was the high working costs. Had the working costs in the first four months of this year been the same as in the case of the Crown Deep in the first half of 1914 the company's profits would have averaged close on £[illegible] a month exclusive of the premium, as compared with the actual average of £70,775, including the premium. It would be found very difficult to reduce costs below 20s. per ton milled without further reductions in wages and salaries, and in the cost of stores. The present scale of wages in the mines, mills and the industrial centres of South Africa were probably [illegible] and tended to retard the development and expansion of the country. This, naturally, led the Chairman to discuss the question of gold and the currency, on which subject Mr. Evans is an admitted authority. In regard to the so-called gold premium, Mr. Evans quoted the little-known fact that the additions made to the working costs of the Transvaal mining industry as a whole from 1914 to December 31 last totalled approximately £41,[illegible], while the premium received on the sale of the gold output only amounted to £[illegible] altogether. "As most of you are aware," said Mr. Evans, "I attribute the increase in costs and the general inflation of prices that have taken place in the past [illegible] to the abandonment of the gold standard by most of the civilised nations of Europe. I am convinced that a careful analysis would show that the agricultural and pastoral industries of South Africa have suffered as severely as the gold mining industry from the [illegible] of the introduction of inconvertible paper money." Mr. Evans backed up his views by quoting from many unimpeachable authorities. He concluded with [illegible] the case against the policy embodied in the Currency and Banking Act Amendment [illegible] of the Minister for Finance to the advice of the bankers in the Union. "I believe," added Mr. Evans, "that a considerable portion of the profit which the Reserve Bank is now making out of paper currency would disappear if gold came into circulation again. I also believe that the other banks can make a much larger profit out of exchange transactions when the gold standard is not in operation. Under these circumstances, it is not likely that the time to revert to the gold standard will ever come if bankers are to have their way." Mr. Evans is not without hope that the truth will yet prevail. "However," he concluded, "I am not so despondent about the future of gold as this criticism of the action of our Government and Parliament might lead you to conclude. We are going through precisely the same experience as the British people went through after Waterloo and the Americans after the Civil War, and I have no doubt whatever that the eventual upshot will be the same: we shall be forced to drop all managed currency plans and to revert to a self-regulating gold money, the value of which cannot be controlled by Governments and bankers." That this obviously sincere and heartfelt belief may soon prove justified is the earnest wish of a considerable section of the community.

The Future of the Rand.

The occasion of the annual meeting of the Committee of the University of the Witwatersrand evoked some notable tributes from our leading public men to the value of the new University. Sir William Dalrymple, in his usual happy vein, delighted the audience by declaring that all the money in connection with the new institution was spent locally, "and not a penny went to overseas shareholders." It is to be hoped that Mr. G. A. Hay, who was present, duly noted the point for the benefit of the precious Provincial Executive. Sir Julius Jeppe spoke with the cheerful optimism that befits the Chairman of the South African Townships about the future of the Rand. We wish we could endorse all he said. "There were always pessimists about," Sir Julius declared. Some 37 years ago, when he and his brother erected the first brick mansion in Johannesburg, their action was considered foolish. The pessimist always declared that there was no hope for the town, and in those far-off days people were even afraid to pay £10 to £20 for a stand. There was the same pessimism when the idea of a Witwatersrand University was mooted. Yet in seven years the students had increased in numbers from 77 to 1,400. Perhaps they were all suffering from the bad times, but people must be convinced that Johannesburg would double and treble itself. "It behoves us to show our faith in Johannesburg," concluded Sir Julius, "and get the people of the town to become real citizens by showing by our contributions in money and in other ways that we are determined that when we have to leave we shall be leaving a city worthy of its name." The Rand could do with a few more specimens of this calibre in the Provincial Council.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal is now visiting Natal and Rhodesia with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

Our Industries Section.

At one period of its career this journal was known as *South African Mines, Commerce and Industries*, and to-day, in order to emphasise the fact that industries other than mining still come within its scope and province, the proprietors have decided to include a Special Industries Section. At no time, of course, have we been insensible to the claims of those other growing activities, but it becomes necessary sometimes for a newspaper to "take its own medicine" and advertise the full extent of the field which it sets itself to serve and cultivate. With the current issue we inaugurate, in a modest way, our new Industries Section, and we shall leave it to speak for itself and demonstrate, to an increasing degree, we hope, each week, its use and value to our readers.

Iron and Steel: Important Announcement.

We are enabled this week to make an important announcement affecting the iron and steel industry in this country. The Dunswart Iron and Steel Works, Ltd., are about to increase their capital for the purpose of extending their works. Negotiations are now being completed whereby new capital for this purpose will be found by an important British firm of engineers.

* * *

E.R.P.M. Finances.

While, according to the Minister of Mines, the position of the E.R.P.M. is "engaging the serious attention of the Government," Nationalist members of the Assembly are keen on digging up the past of that unfortunate property. Mr. Munnik, during the week, framed a lengthy question asking the Government to make an inquiry into the whole history of the promotion and financing of the group now known as the E.R.P.M. The Minister's reply was very terse and practical. According to the wired report, he said: "No useful purpose can be served by an enquiry, and the Government does not intend to inquire into the remote financial history of the company which, in any case, cannot affect the present-day question whether the mine should be assisted to keep running by assistance from public funds. There are no preferent shareholders, but there are debentures, of which £525,738 are still outstanding. The company has cash assets sufficient approximately to cover outstanding debentures. About £100,000 shares and debentures are held by the controlling house, and three directors represent large but unknown holdings of French shareholders. The total share issue is £2,298,773."

* * *

Useful Work on Drill Steel.

"A Handbook of Rock Drill Steel: its Selection, Heating, Forging and Tempering," is the title of a neat 80-page booklet of pocket size just issued by the Sullivan Machinery Company, as circular No. 72 G. Besides being an instruction book for the use and care of Sullivan drill steel sharpeners and drill steel furnaces and accessories, it includes instructions for the proper selection and treatment of drill steel, practical specifications for drill steel, and suggestions and data for the lay-out and construction of an ideal steel sharpening shop. Among the devices available as aids of the steel shop are a signal pyrometer, to notify the smith when his heating furnace is becoming too hot, and a [illegible] indicator to indicate the proper temperature for plunging the hot steel. The latter consists of a magnet suspended in a brass case, with an indicator on top which is displaced when the magnet drops. As steel loses its magnetic quality at the point of decalescence, which is the proper temperature for plunging, a hot bit held against the indicator will show whether or not it has reached this point.

* * *

Union's Official Year Book.

We have nothing but praise for the latest volume of the Official Year Book of the Union, No. 5, which covers mainly the period 1910 to 1921, though it has been brought up to date wherever possible. Mr. C. W. Cousins, the Director of Census, who is its editor, draws attention to the following points: "The section of vital statistics has been amplified by the inclusion of information as to the causes of infantile deaths and the incidence of such deaths in the principal urban areas. Fuller information has been given on labour and other social questions, such as wages (including wages of non-Europeans), hours of labour, housing loans, friendly societies and liquor restrictions. A summary has been given descriptive of the share taken by South Africa in the European War. Some further information has been included on the subject of irrigation and water boring, and a more complete statistical statement has been inserted of recorded rainfall for a series of years at the more important meteorological stations. The chapter dealing with agriculture has been rendered more comprehensive, and will serve in itself as a reasonably complete 'Year Book of Agriculture,' for which a demand has been claimed. It includes an examination of the conditions of maize production."

Facts About Copper.

A correspondent writes asking for facts about the copper [illegible] industry and trade. He may be referred to the statistics prepared by the American Bureau of Metal Statistics, and to those published in Weed's "Mines Handbook," and in "Mineral Industry." A recent article of interest, "The Organisation of the Copper Market," was published in the *Harvard Business Review* for January, 1923. "Consumption of Copper and Its Varied Uses," by H. D. Hawks, published by Cameron, Macfie & Co., New York, is an informative book devoted especially to the uses of copper. The various publications of the Copper and Brass Research Association and of the Anaconda Copper Mining Co. also are valuable sources of information as to the outlets for copper in industry. Circular 73 of the U.S. Bureau of Standards, "Copper," is largely a treatise on the physical properties of the metal.

* * *

Electric Locomotives Contract.

In the House of Assembly last week, Mr. Boydell asked the Minister of Railways and Harbours: Whether it is a fact that a contract for a large number of electric locomotives required in South Africa was given some time ago to Messrs. Vickers or any other British firm? The Minister of Railways and Harbours replied: The Metropolitan Vickers Electrical Company, Limited, their tender being the lowest. The contract was signed on May 15, 1922, for 78 locomotives at £10,918 each. The first locomotive is to be delivered in November, 1923; balance up to January, [illegible]. The accepted tender contemplated Continental manufacture of mechanical parts. With the approval of the Administration, subcontracts have been placed in Germany for wheels and axles, springs and steel plates.

* * *

Meat Producers' Exchange.

The last stages in the drama connected with the Meat Producers' Exchange were played out at the end of last week, and may be very briefly put on record. Following upon the provisional order of liquidation of the Meat Producers' Exchange being made final, a circular was issued by Mr. St. C. [illegible] and three others to the shareholders, stating in effect that the refusal of Mr. Gwynne's application for a short postponement of the proceedings was due to the action of the [illegible]. The circular further stated that a new Exchange was about to be formed. The Board has issued a reply to the circular pointing out that delay would have been the direct [illegible] in order to pay out creditors, since there were liabilities of over £70,000 to be dealt with. There for the moment the matter rests.

* * *

Angola Diamonds.

Angola Diamonds, though little is said of it in this country, appear to be fairly active in London. We may recall that the company has an issued capital of £2,000,000 in £1 shares, and the property owned comprises important alluvial diamond deposits in the Portuguese colony of Angola and in the adjoining Belgian Congo. The Company is exempt from all taxation, and profits are divisible [illegible] per cent. to the shares, 32 per cent. to the Portuguese Government, and 13.9 per cent. to reserves and directors' participation. The company is loaning £1,000,000 to the Angola Government at 1 per cent. above the Belgian Bank rate, the service of which is to be met out of the Government's participation in profits and its dividends on shares. Prospecting work has proved the existence of well over 1,000,000 carats, and has indicated that at least a further 7,000,000 to 8,000,000 carats will be available. Costs are low, [illegible] leaving an ample margin, and an annual production of 250,000 carats at 53s. is looked for, giving a mining profit of £627,000 and a net profit plus interest of £365,625 accruing to the shareholders, equal to over 18 per cent. on the capital. A 5 per cent. dividend was paid for 1921, when the diamond market was very restricted.

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The Crown Mines Annual Review.

CHAIRMAN'S FULL AND DETAILED EXPOSITION—WORKINGS AT DEPTH—GOLD AND THE CURRENCY QUESTION—ATTITUDE OF BRITISH GOVERNMENT AND THE BANKS.

At the annual meeting of the Crown Mines, held on May 25th, Mr. Samuel Evans, Chairman, reviewing the operations for 1922, said the revenue from gold, including premium, was £2,778,425, from silver £8,978, and from all other sources £31,769, or a total of £2,819,172, which, with an amount of £502,560 at credit of appropriation account at the beginning of the year, made a grand total of £3,321,732. The total disbursements, including £61,989 expended on purchase of claims and lease of undermining rights, £55,139 on acquiring ex-enemy shares, and £369,282 in dividends, totalled £2,942,910. The balance at credit of appropriation account at December 31 was £378,822, which included cash £126,092 and stores and materials on hand.

The debenture debt had been reduced to £228,650 and would be entirely liquidated before the end of 1925. The annuity of £19,979 payable to the Government in connection with the lease of certain undermining rights would also cease in three years' time, so that in 1925 the company would be relieved of expenditure approximating £110,000 per annum.

Five hundred and forty-seven additional mining claims had been acquired during the year, bringing the company's total claim area up to 2,886 claims. As the result of various acquisitions since 1909, the company had now 147 unworked Main Reef leader claims, and 160 unworked South Reef claims more than when the company came into existence. Although the ore in the intact claims was at a greater depth than formerly, the grade of ore being developed in the deeper ground was on the whole better than had been anticipated when the company was formed.

Dr. E. T. Mellor, consulting geologist to the Central Mining and Investment Corporation, Limited, had gone into the question of the probable depth of the reef in the areas which we have recently acquired from the Government. Dr. Mellor concludes his report with the following paragraph:—

> "A careful survey of the ground indicates that the South Reef in the new areas will range in depth from 3,250 feet to 6,250 feet, and that, with the exception of a small portion of Vierfontein (West) area, the reef in the new area will be above the 6,000 foot level."

"That is," continued the Chairman, "the reefs on the southern boundary of our mining ground will probably be about one thousand feet nearer the surface than was anticipated at the time of the amalgamation, and we are therefore justified in concluding that if the grade continues as good as it is in the lowest areas developed to-day we shall be able to mine at a profit the whole of our ground, except perhaps a small strip of about 100 claims which extends south of our main southern boundary on the farm Vierfontein. The Village Deep have already proved that mining on these fields can be carried on at a vertical depth exceeding 6,000 feet, as the main incline shaft on that mine is down to a vertical depth of 6,263 feet from the surface.

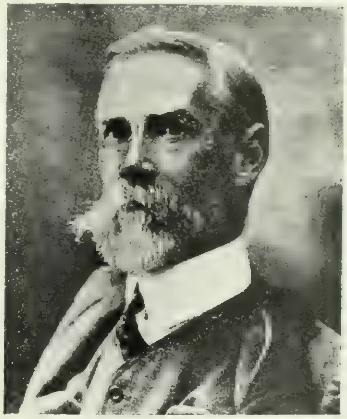
Ore Available for Stoping.

At the end of December last our ore reserves totalled 8,882,100 tons, estimated to carry 6.1 dwts., of which 7,382,600 tons carrying 6.0 dwts. is available for stoping, being an increase since December, 1921, of 179,800 tons in the quantity of payable ore available. Recently the company has been criticised on two points. In the first place, it has been alleged that the ore mined is above the average value of the reserves, and, secondly, that the South Reef is barely payable in the lower workings. As regards the first point, it must be remembered that during the past ten months we have been mining at the average rate of over 239,000 tons per month, which renders it difficult, if not impossible, for any selective mining to be carried out. The fact is the chief causes of the increase in the values obtained from the ore mined recently are: (1) The increase in the value of the ore mined from reserves, and (2) a decrease in the quantity of ore mined from other sources. The improvement in the value of the ore mined from reserves is due largely to a decrease in the stoping width owing to the extended use of jackhammers. The percentage of ore mined from other sources is diminishing as old workings are being exhausted. As to the South Reef, it has always been less valuable than the Main Reef Leader.

South Reef Ore Reserves.

During the past five years the South Reef ore reserves have been:

Year	Tons.	Width. Inches.	Value. Dwts.
1918	3,278,350	64	5·6
1919	3,268,900	63	5.45
1920 ...	3,158,900	63	5.4
1921 ...	3,532,100	62	5.4
1922	3,563,700	61	5.5



Mr. Sam Evans, Chairman of Crown Mines.

The tons mined from the South Reef ore reserves have been:—

Year.	Tons.	Value. Dwts.
1918 ..	473,057	5.9
1919 .	589,835	5.9
1920	615,408	5.7
1921	474,515	5.4
1922 .	469,054	5.2

The fact is, a careful examination of the assay plans and records shows that during the last five years there has been no falling-off in the value of the South Reef developed, and that the value of the South Reef ore reserves has remained practically constant. The South Reef in the western section of the mine, that is, west of No. 7 shaft, in the lowest levels has had a remarkably high percentage of payability. As yet no serious attempt has been made to develop the South Reef from No. 5a shaft. As the capacity of the shaft was limited, it was considered more advisable to push on development on the Main Reef Leader, which has exposed highly payable ore. The total footage of Main Reef Leader sampled during the current year in the 5a shaft area was 2,330, of an average value of 394 inch dwts. Of this 95 per cent., or 2,206 feet, is payable.

with an average value of 462 inch-dwts. During the current year, January to April, the total footage developed and sampled on both reefs south of the South Rand dyke was 1,046, of which 61 per cent. is payable with an average value of 412 inch-dwts.

Working Operations Compared.

Quoting figures comparing the results of operations in March last and for the six months July to December, 1922, with the same months in 1914, Mr. Evans declared that on the whole, apart from the high working costs, they disclosed a gratifying state of affairs.

He showed that in March last, compared with the average of the months July to December, 1914, there had been an increase of 78·7 per cent. in the footage developed, of 12·6 per cent. in tons milled, 17·9 per cent. in the total amount of gold recovered and 4·9 per cent. in the recovery per ton milled, while the costs had increased by 27.4 per cent. per ton milled, or 21·5 per cent. per ounce recovered.

Mr. Evans considered the improvement of a quarter of a dwt. in the yield per ton milled most satisfactory, especially in view of the fact that the bulk of the ore sent to the mill came from stopes which were deeper than were being mined in 1914 and also that 20,000 to 30,000 tons per month more were being milled now than in 1914.

The unsatisfactory feature was the high working costs. Had the working costs in the first four months of this year been the same as in the case of the Crown Deep in the first half of 1909 the company's profits would have averaged close on £130,000 a month exclusive of the premium, as compared with the actual average of £70,775, including the premium.

It would, he feared, be difficult to reduce costs much below 20s. per ton milled without further reductions in wages and salaries and in the cost of stores. The present scale of wages on the mines, railways and industrial centres of South Africa were unduly high and tended to retard the development and expansion of the country.

The Gold Standard.

It has been suggested that the mining industry has gained more from the premium on gold than it has lost through the increase that has taken place in working costs. That is not the case. Up to the end of last year the premium derived from the sale of gold produced by the Crown Mines amounted to £2,092,000, while the increase in our working costs on the ton milled basis since the commencement of the war amounted to £4,785,000. Taking the gold mining industry of the Transvaal as a whole, the additions made to working costs from 1914 to December 31st last totalled approximately £41,062,000, whilst the premium received on the sale of the gold output only amounted to 24,685,000 altogether. "As most of you are aware, I attribute the increases in costs and the great fluctuations in prices that have taken place in the past eight or nine years to the abandonment of the gold standard by most of the civilised nations of Europe. I am convinced that a careful analysis would show that the agricultural and pastoral industries of South Africa have suffered as severely as the gold mining industry from the fluctuations in prices brought about by the introduction of inconvertible paper money.

" In fact, the substitution of inconvertible paper money for gold money by our Government and other governments in 1914 and afterwards has been entirely harmful to all sections of the community except perhaps to debtors and speculators.

" At several of our previous annual meetings I have dealt rather fully with the relation of gold to the monetary systems of the world. This still remains the supreme issue as far as gold mines are concerned. The value of gold in terms of commodities and services depends to a great degree on its use as money. If its use for currency purposes ceases or is severely curtailed, its value in goods and services is bound to depreciate.

" I have no doubt whatever myself that in the long run the civilised nations now on an inconvertible paper money basis will be forced to restore the gold standard, and that stability, tranquillity and prosperity are out of the question whilst the present adherence of Europe to inconvertible paper money continues.

Some Progress Made.

" Some progress has been made since our last meeting. It is increasingly recognised that the general restoration of the gold standard is the only practical solution of the exchange and currency troubles of the world. Mr. Austin, the statistician of the National City Bank of New York, in the April Bulletin of that institution, writes:—

" 'One of the interesting features of the year's development in those countries that are swimming in fiat paper money has been the movements inaugurated in several to get back to relations with a gold basis. They all show a longing for gold, notwithstanding the fact that some of the Governments started on their wild paper money jag with the avowed belief that the idea of a gold basis was an invention of the international bankers, for the purpose of exploiting the common people.'

" Mr. Austin adds that the proposals and preparatory legislation in such countries as Austria, Poland, Hungary, Lithuania, Latvia and Czecho-Slovakia show that the Governments of those countries have become convinced of the necessity of getting back to a metallic unit of value. In Russia the new State Bank is issuing notes fully backed by gold, and foreign trade is being transacted largely on a gold basis. Germany is floating a 50,000,000 dollar loan repayable in gold in 1926.

" In the April Bulletin of the U.S.A. Federal Reserve Board the editor writes:—

" 'Simultaneously with the floating of the gold loan comes the request of the Central Association of German Wholesale Traders to the Federal Ministry of Economics that the Reichsbank issue bills of exchange and open current accounts on a gold basis. Although it is not as yet known what the attitude of the Reichsbank is towards this request, it is, nevertheless, a proof of the impossibility of doing business on the basis of a highly depreciated currency and expresses very well the desire of the German business world to return to the gold standard.

" 'The impossibility of doing business on a paper mark basis was realised long ago by bankers and merchants, who, since the mark started its downward course, have used gold as a general standard of value, while the paper mark served merely the function of a medium of exchange. As a matter of fact, in some instances the price of certain commodities has become the standard by which the value of the paper money is determined.

" 'This situation became more pronounced during 1922, when practically all of the wholesalers put their calculation on a gold basis and received payment in paper marks in accordance with the daily quotation of the dollar. This method of doing business prevails in all countries with highly depreciated currencies. Practically all dealings of any importance in Russia, Poland, Austria and other Central and Eastern European countries are carried out on a gold or dollar basis, while actual payment is made in the paper currency of the country.'

Commodities Used for Currency.

" In a recent article M. Jules Descamps, of the Bank of France, referred to the great extent to which commodities such as barley, coal, rye and wheat are being used for currency purposes in Germany, and expressed the view that these diversions from the use of the mark as money are merely temporary expedients on the way to the adoption of a new gold standard.

" The unquestionable indications are that the time cannot be far distant when gold coins will come into active circulation in Germany, Russia and the other Central and Eastern European countries. The inhabitants of countries whose paper money is completely discredited will sooner or later force their Governments to abolish the embargoes on the import and export of gold, so that business can be carried on freely with a money which cannot be easily depreciated by Government action.

Removal of Artificial Hindrances.

" Once artificial hindrances are removed gold will flow to those countries where a given quantity of it has the greatest value measured in commodities and services. What Europe needs most to-day is free trade in gold.

" The paper money of South Africa is very nearly on a parity with gold, but unfortunately the Government and Parliament of the Union have just decided against a return to the gold standard at the end of next month, and in favour of extending and consolidating the use of inconvertible paper money for a further period of two years. This decision has been taken on the recommendation of a majority of the members of the Board of the South African Reserve Bank.

" The main purpose of the Currency and Banking Act Amendment Bill appears to be to place and maintain our inconvertible paper money on a parity with the inconvertible paper money of the United Kingdom. In order to accomplish this, our paper money is made legal tender (hitherto only gold and certificates fully backed by gold have been legal tender), its inconvertibility is extended to July 1, 1925, and the Reserve Bank is given power to issue currency notes against the deposit of British and South African Treasury Bills to the extent of 35 per cent., provided 40 per cent of the issue is backed by gold and 25 per cent. by commercial paper.

" That is, Treasury Bills will take the place of gold in balancing our exchange transactions with the United Kingdom and will be apparently the means whereby the purchasing power of the South African paper pound will be kept on a level with that of the paper pound of the United Kingdom.

" Now, what is the present currency policy of the United Kingdom? Up to a comparatively recent date it would appear that the British Government was acting on the recommendations of the Committee on Currency and Foreign Exchanges, known as the Cunliffe Committee, which reported (first in August, 1918, and finally in December, 1919) in favour of the restoration without delay of an effective gold standard with a free market in gold.

British Government's Policy.

" There is now, however, some evidence in support of the conclusion that the British Government are disposed to abandon the policy outlined in the reports of the Cunliffe Committee, although as far as I know there has been no official pronouncement to that effect. The recommendations of the Cunliffe Committee involved deflation, and Mr. Walter Leaf, chairman of the London, County, Westminster and Parr's Bank, recently declared that the national policy of the United Kingdom is ' a policy of stabilisation, but not deflation.'

" The chairman and directors of other English banks have also condemned the deflation policy of the Cunliffe Committee. Mr. Clegg, the Governor of the South African Reserve Bank, in his evidence before the Select Committee on March 22 last, said: ' I cannot express the mind of Great Britain, but from what I have heard from people who know what is going on, there will be very considerable hesitation on the part of Great Britain to open a free gold market directly sterling reaches gold parity.' (Q. 1567). ' Great Britain has this debt (to America) in front of her, and that seems to me to be a matter which will make her hesitate before she actually takes off the embargo on gold.' (Q. 1569).

" In ' The Economist ' of April 21, the editor, in reviewing Mr. R. G. Hawtrey's book on ' Monetary Reconstruction,' states that ' it is commonly believed that the Treasury and the Bank of England would like to translate into practice ' Mr. Hawtrey's managed currency doctrine. Mr. Hawtrey holds that ' the wisest course for the time being might be to concentrate on the stabilisation of sterling in terms of commodities rather than tie the pound to a metal, the vagaries of which cannot be foreseen ' (Page 22, ' Monetary Reconstruction ').

" ' Further deflation,' he writes, ' is out of the question, and all we can do is to stabilise our currency at its existing purchasing power till the redundant supplies of gold now in America have brought down the commodity value of the dollar to the corresponding level.' (Page 147, ' Monetary Reconstruction ').

" I should mention that in ' The Economist ' of April 28 Mr. Hawtrey writes: ' The views expressed in my book have no relation whatever to those entertained by the Treasury or the Bank of England. They are entirely my personal opinion written in a spirit of scientific inquiry.'

The Financial Commission.

" On the recommendation of the Financial Commission, of which Sir Robert Horne, the then Chancellor of the Exchequer, was chairman, the representatives of the Powers at the Genoa Conference held in April last year recommended that a meeting be called in London of the representatives of central banks to consider amongst other things a scheme for an international convention based on the gold exchange standard and designed with a view to stabilising prices and ' to prevent undue fluctuations in the purchasing power of gold.'

" According to the editor of ' The Economist,' Mr Hawtrey ' inspired the Genoa resolutions on currency.'

" As I pointed out at our meeting last year, even the temporary and partial success of the Genoa proposals might prove very harmful for gold-mining, and it is possible that the contemplated conference of central banks had not been called because it was realised that when the matter came to be thoroughly thrashed out there might be considerable opposition from South Africa, Australia, and perhaps Canada, to the adoption of the gold exchange standard or any other managed currency plan.

" Having regard to all the known facts, it seems not unjust to conclude that the present intention of the British Government is to avoid going back to the gold standard as it existed before the war, and to pursue a currency policy which will maintain or possibly enhance the existing level of prices of commodities and services. If it can be made a success, which I question, there are obvious advantages for the British Government in such a course.

" It will lighten the burden of the debt and of taxation, and will mean a very substantial reduction in terms of commodities of the debt of the United Kingdom to the United States of America. As Mr. Walter Leaf points out, the fall in the purchasing power of the dollar in the past two years means a diminution in the British debt to the U.S.A. of over £432,250,000. He adds: ' The fall, I take it, represents the decrease in the value of gold owing to its exclusion from use as a circulating medium, and is likely to be of a permanent nature.

Managed Currency.

" As I have repeatedly stated at our annual meetings and on other occasions, I do not believe in the possibility of any managed currency plan being made a permanent success. I entirely agree with the conclusion of the Currency Committee of the British Association (Hull meeting, 1922) that ' taking a long view, the governmental manipulation of currency has been and, as far as can be foreseen, is likely to be mischievous.'

" Nevertheless, it is fairly certain that a persistent and prolonged attempt to establish a managed currency in the British Empire might do considerable harm to the Rand gold-mining industry and to South Africa generally, and for that reason it is regrettable that the Government and the Parliament of the Union should be adopting a policy which may tend to prolong and aggravate our currency and exchange troubles.

" The Currency and Banking Act Amendment Bill was referred to the Select Committee on Public Accounts for consideration and report. That committee examined six of the directors of the Reserve Bank, the Secretary for Finance, and Dr Bruwer—eight witnesses altogether. Apparently the supporters of the Bill considered that gold is only a fair weather currency and that in times of trial and [illegible] inconvertible paper is the money to use and to rely on. Much attention was paid to the bearing of the balance of trade on exchange rates, and stress was laid on the fact that South Africa is a debtor country, and that the bulk of our external trade was with the United Kingdom.

Bankers Responsible for Bill.

"In the discussion in Parliament it was made clear that the bankers were entirely responsible for the Bill. Mr. Burton, the Minister of Finance, in replying to the discussion on the second reading on March 21, said: 'The whole of this Bill is the product of consideration and resolutions taken by the board of directors of the Reserve Bank without the faintest intimation by the Government on any one of these matters.

"'The resolutions submitted to the Government and put into this Bill were resolutions which emanated solely and entirely from the board of directors of the Reserve Bank.' It does not appear to have been realised that bankers are dealers in currency and that usually they can make more profit out of paper money than out of gold money.

"I believe that a considerable portion of the profit which the Reserve Bank is now making out of paper currency would disappear if gold came into circulation again. I also believe that the other banks can make a much larger profit out of exchange transactions when the gold standard is not in operation. Under these circumstances, it is not likely that the time to revert to the gold standard will ever arrive if bankers are to have their way.

"As Professor Bonamy Price and Professor W. G. Sumner have pointed out, the currency troubles of England during the bank restriction period, and of the United States at the time of the greenbacks, were unnecessarily prolonged because of the advice of bankers. However, I am not so despondent about the future of gold, as this criticism of the action of our Government and Parliament might lead you to conclude.

Same as After Waterloo.

"We are going through precisely the same experience as the British people went through after Waterloo and the Americans after their Civil War, and I have no doubt whatever that the eventual upshot will be the same: we shall be forced to drop all managed currency plans and to revert to a self-regulating gold money, the value of which cannot be controlled by Governments and bankers.

"In conclusion, I desire to record your directors' appreciation of the valuable and loyal services rendered to the company by our consulting engineer, Mr. H. Stuart Martin, and our general manager, Mr. A. J. Walton, and the managers and staff at the mine and at the head office during the year.

"I now beg to move that the directors' report, balance sheet and accounts for the year ended December 31, 1922, be received and adopted."

The motion was duly seconded and unanimously agreed to.

In reply to a question as to whether the new corduroy system had been given a trial, the chairman replied in the affirmative.

Mr. F. Raleigh was re-elected to the directorate to fill the vacancy caused by the death of Mr. H. A. Rogers; Sir Evelyn Wallers, K.B.E., and Mr. D. Christopherson, C.B.E., were re-elected to the board of directors.

The proceedings terminated after some routine business had been disposed of.

BREAKING ROCK AND RECORDS UNDERGROUND.

Driving with Ingersoll-Rand Drifting Drills.

Improved Prospects of the Durban Roodepoort Deep

OBJECTS OF NEW POLICY AND PROGRAMME EXPLAINED—THE ADDITIONAL CLAIM AREA—THE DEBENTURE SCHEME.

Mr. F. R. Phillips, chairman, presided at the annual meeting of the Durban Roodepoort Deep, Ltd., and said:

A true comparison between the year under review and the preceding twelve months is not possible on account of the strike which lasted from 10th January to 17th March. During the first quarter of the year a loss of £39,371 was incurred, besides loss of profit. The working profit for the year amounted to £10,046, as against £36,190 for the previous year. In addition to a slightly decreased yield, the revenue obtained from the difference between the standard price of gold and the price actually realised showed a material falling-off, the average price being 90s. per fine ounce as against 105s. 2d. in 1921. On the other hand, working costs were reduced from 33s. 5d. per ton milled in 1921 to 29s. 5d. in 1922. It is clear that had a reduction of costs not been effected, the year's working would have resulted in a serious loss. It was vitally necessary, therefore, if the survival of this Company were desired, that the recommendations put forward on behalf of the industry, for the reorganisation of working conditions should be adopted. Unfortunately, these recommendations, which were subsequently investigated by an impartial and independent commission of enquiry and proved to be both reasonable and just, were met with bitter opposition on the part of the leaders of the trade unions, and the disastrous strike, which is undoubtedly fresh in the memories of all those present, eventuated. The effects of the dislocation caused by the almost complete cessation of operations in a highly organised industry were necessarily felt long after the date of the official termination of the strike, and it was probably not till after the middle of the year that conditions could be described once more as normal. This fact is clearly seen in the quarterly reports issued prior to the publication of the annual reports and accounts, as follows:—

	Tonnage Crushed.	Working Costs per ton milled.		Total Profit.	Average Price of Gold.	
		s.	d.	£	s.	d.
Quarter ending 30th June	78,500	28	11	2,770	90	5
Quarter ending 30th September	93,500	26	5	20,463	90	7
Quarter ending 31st December	101,100	25	2	21,542	87	10

The noticeable features in the above figures are the steady increases in the tonnages crushed, the decreased working costs, and, notwithstanding the lower average price for gold, the increased profits. The improvement in the results must, of course, be attributed primarily to the reorganisation of underground working conditions and the greater efficiency displayed in all departments.

The Accounts.

Turning for a moment to the Accounts, the Working Expenditure and Revenue Account shows a net profit of £3,044 11s. 6d. This amount, together with the unappropriated balance of £7,503 0s. 6d., brought forward from last year, makes a total of £10,547 12s. 0d., and has been dealt with as follows:—

	£	s.	d.
For Capital Expenditure .	£7,730	18	8
Forfeited Dividends Refunded .	6	7	1
15,766 Ex-Enemy Shares	1,666	19	0
Unappropriated Balance	1,143	7	3

As you will see from the Accounts, the liabilities exceed the cash in hand to an amount of £33,119 6s. 5d. You will remember that in 1918 the Central Mining and Investment Corporation, Limited, and the Rand Mines, Limited, came to the assistance of the Company with a loan for the purpose of financing certain capital expenditure. At the 31st December, 1922, this loan, as shown in the Balance Sheet, stood at the figure of £82,663 13s. 10d. Since that date, however, this amount has been considerably reduced, and at the end of April was approximately £[illegible]. On the other hand, certain additional capital expenditure is contemplated for the purpose of improving the profit earning capacity of the Company. I will deal later on with the programme which the Board has in view, and with the proposed method of financing it.

Enemy Shares.

With reference to the purchase of the ex-enemy shares, it was announced at last year's meeting that steps would be taken to cancel these shares and reduce the capital of the Company. Since then the Board has considered and approved of a simpler and better plan. It has been decided to retain these shares for the Company in the names of two trustees and to show them on the asset side of the Balance Sheet. By this means the capital of the Company remains unaltered, thereby avoiding the necessity and expense of calling a special meeting for the purpose of effecting a reduction of the capital. At the same time, the Company benefits in so far as the payment of dividends is concerned to the same extent as though dividends were payable on a reduced capital, and the new procedure has this further advantage that the Board retains complete freedom in the matter of dealing with these shares on behalf of shareholders at some future date, should the occasion arise, either by way of re-issue or cancellation.

The Year's Results.

The details of the year's operations are clearly set out in the reports of the Consulting Engineer and Manager. The ore reserve, as re-calculated, standing at 1,167,600 tons of 6·7 dwts., shows an increase in tonnage of 75,200 tons and in value of ·2 dwt., as compared with the previous year. The quantity and value of ore developed during the year amounted to 407,500 tons at 6·8 dwts., thereby increasing the available ore reserve from 811,100 tons at 6·4 dwts. to 946,000 at 6·7 dwts. As the Consulting Engineer truly says, this increase in tonnage and value marks a distinct improvement in the position of the mine.

During the year a total development footage of 9,994 ft. was accomplished. The results were satisfactory both in respect to percentage of payability and in the reef values exposed, notably in the case of the Main Reef.

In the current year development exposures have continued to be highly encouraging, both in regard to values and percentage of payability. In the first quarter of the year the total footage sampled on the reef amounted to 1,985 feet, of which nearly 90 per cent. was payable. The average payable values disclosed were on the Main Reef 124 inch-dwt., and on the South Reef 164 inch-dwt.

Since the beginning of this year up to the end of April the west incline has been sunk a further 93 feet and east incline a further 57 feet.

With regard to the reduction works, certain alterations have been authorised and are now almost completed, with a view to increasing the tonnage capacity of the plant and improving the extraction. You will have noticed that at the end of last year the monthly tonnage crushed had increased, and, provided the labour force remains adequate, as it is at present, there seems no reason why an average of 33,000 tons should not be maintained. The maintenance of tonnage up to the full capacity of the mill is of immense importance for the continuance of profits. With the alterations now being effected in the reduction works, it is confidently expected that the recovery figures, in spite of the increased tonnage put through the mill, will be on an efficient and gradually improving basis.

It has also been decided, in order to avoid the disadvantages of plate amalgamation, to substitute concentration by means of corduroy cloth for the recovery of gold in the mill. By this means it is hoped to eliminate as far as possible cases of mercurial poisoning and to minimise opportunities for gold theft.

With regard to operations in the current year, the total working profit for the first quarter of the year amounted to £14,940, the average net price of gold being 85s. 4d. per ounce and the average working costs 25s. 9d. per ton milled. The profit for the month of April was £6,643, with costs at 25s. 3d. per ton milled, the price of gold being 85s. per fine ounce (or only about 1s. above standard value) after taking into account realisation charges.

Policy and Programme.

I must now deal with what are matters of policy, out of which arises the question of the future prospects of the mine.

The Board has agreed upon a programme involving a capital expenditure of something less than £40,000 for the following purposes. It has been decided to resume the sinking of the new circular shaft, not to the final depth as originally contemplated, but to a further depth of about 700 feet, that is to say, to 50 feet below the 17th level. The reason for sinking the shaft slightly below the 17th level is that, should it be decided at some future date to continue the sinking, it will be possible to do so without necessitating a stoppage or dislocation of operations at and above that level. Concurrently with the sinking of this shaft, it has been decided to install a fan at the surface and to connect the shaft by crosscutting on the 17th level from the present workings. By this means the ventilation of the whole mine will be considerably improved, and thereby increased working efficiency may be expected. Further, No. 1 Compound Shaft, which is at present the main hoisting shaft of the mine, will be converted from an upcast into a downcast shaft, which will have the effect of appreciably reducing its maintenance costs.

Another direction in which it is proposed to devote some capital expenditure, included in the above-mentioned total, is for the purpose of obtaining an increased supply of compressed air, which is, and has for some time past, been inadequate. After installing a new compressor and the necessary air pipe-lines, every effort will be made to replace the present hand labour or hammer boys by jackhammers and other types of machine drills. Should the endeavour in this direction be succesful, not only will increased efficiency and reduced breaking costs result, but the mine will to a large extent be relieved from the haunting fear, such as it has experienced in the past, of a severe native labour shortage or a violently fluctuating supply.

In reviewing the capital expenditure programme outlined above, I will summarise the position by saying that the effect will be, if the desired objects are attained, to give better working conditions, increased efficiency, reduced costs and added security to the main hoisting shaft.

New Claim Area.

One of the most important events in the recent history of the mine was the acquisition last month on favourable terms, of an intact block of 112 mining claims belonging to the Princess Estate and Gold Mining Company, Limited, from the Liquidators of that Company. These claims adjoin the western boundary of your property and lend themselves to easy working by us. The values disclosed prior to the closing down of the Princess Estate appear to be at least as good as those obtaining in our own area, and the possibility of developing laterally instead of only in depth during the next few years, as well as the opportunity of greatly improving the ore reserve position, is very favourable to your Company.

But the greatest benefit afforded by this purchase is the extended lease of life which it gives to us. Based on a milling capacity of 35,000 tons per month, it is estimated that the life of the mine has been nearly doubled. In other words, instead of looking forward to a future of only 10 years as we did at the end of last year, we now hope to enjoy a profitable existence for the next 20 years. The importance of this event to the whole Roodepoort district needs no elaboration to be appreciated.

The Financial Position.

I will now deal with the method by which we propose to place the Company in a sound financial position. The present loan account of the Company, together with tho capital expenditure scheme, involves the sum of about £85,000; to this must be added the amount in respect of the purchase of the Princess claims, and a margin for contingencies. It is proposed to create a debenture issue of £100,000, bearing interest at the rate of 6 per cent. per annum, and to offer these debentures to shareholders for subscription in the proportion of £1 value of debentures for every five shares held. For the first three years debenture holders will have the right to convert these debentures into shares at par, and thereafter the debentures, or balance of them if any, will be redeemed during the ensuing five years. The whole issue will be underwritten by The Central Mining and Investment Corporation, Ltd., and Rand Mines, Ltd., for a commission of 3 per cent. A special meeting for the purpose of effecting the necessary alterations in the Company's capital and for passing the necessary resolutions, if thought fit, will be held on the 29th June next, and shareholders have been advised of all particulars by circulars and in the Press in the usual way.

In conclusion, I would like to express the Board's cordial appreciation of the loyal and able services rendered by the Manager, the Consulting Engineer and by their respective staffs.

I now beg to move that the Directors' report, balance sheet and accounts for the year ended 31st December, 1922, laid before the meeting, be received and adopted.

The reports and accounts were adopted.

Mining Men and Matters.

We learn with regret of the death of Mr. A. B. Pocklington, one of the Rhodesian Inspectors of Mines, who was well known on the Rand in the early days.

* * *

Mr. C. E. Farquharson, Assistant Manager of the General Mining and Finance Corporation, is leaving next Monday on six months' holiday in Europe.

* * *

The announcement made early in the week that Mr. H. Stuart Martin, Consulting Engineer to the Central Mining Rand Mines Group, who is going on long leave next month, would not return, has been received with general regret in mining circles. Mr. Stuart Martin has been with the Corner House since 1910, and during that period he has won the respect and the esteem of the whole mining community. Only a fortnight ago we reproduced a recent photograph of Mr. Martin, and we had no inkling at that time of his contemplated retirement. We can only hope that the unique experience of Rand mining which he has been in a position to accumulate will not entirely be lost to these fields, and that Mr. Martin may remain attached, in some advisory capacity, even oversea, to the industry he has done so much to advance.

* * *

Mr. W. H. Goodchild, A.R.S.M., F.G.S., has been spending a few days in Lourenco Marques prior to returning to the Companhia Mineira de Moçambique's concession in the north of the province, on which he has come out from London to report. Mr. Goodchild is one of the world's eminent geologists, and he has had a long and close association with South Africa. He holds the gold medal of the Consolidated Goldfields of South Africa, and is also a Bessemer Medallist. Associated with him in the inspection of this alluvial gold proposition is Mr. Hugh Gemmell, A.I.M.M., one of the leading dredger experts, who is now on the property.

The Week in the Sharemarket.

A STEADIER TONE—ANNUAL MEETINGS PRODUCE GOOD EFFECT—CITY DEEPS, CROWN MINES AND BARNATO STOCKS BETTER—DIAMONDS SUFFER A CHECK—GENERAL OUTLOOK BRIGHTER.

After an irregular week the market has steadied considerably. Reports which are coming to hand of good tonnage and profits for the month of May have had a steadying effect. Diamonds, which suffered a severe set back, have also recovered. Company meetings held throughout the week have revealed the sound position of the industry. Corner House stocks have been notable for the firmness of Crown Mines, and for the decided improvement in City Deeps, Nourse Mines, and Transvaal Gold Mining Estates. All of these mines continue to develop improving prospects. The position of Crown Mines, disclosed at the meeting was most satisfactory. Anglo-American stocks have had a quiet week, Springs being to some extent an exception. There was good buying of this stock at one time from well-informed quarters. There is no fresh news from West Springs, and the diamond shares associated with the Anglo-American group have had an unfortunate week. Union Corporation stocks call for no comment. There has been a quiet market in Gedulds, of which dealers still appear to be nervous. General Mining stocks have been steady. There is some small inquiry for Roodepoort United shares. Barnato stocks have displayed great steadiness, assisted by the confident tone of the meetings. The Randfontein position is now regarded as being very sound, and a dividend may be anticipated at the end of the year. Improvements in tonnage, grade, and costs are looked for from this concern. State Mines have been an exceptionally firm market, and it appears that the bears have so far failed to depress New States. Van Ryn Deeps are expected to have an excellent month, and here again the position of the mine as revealed at the meeting is most sound. New Consolidated Gold Fields stocks have displayed no feature. Simmer and Jacks were bought at one time in anticipation of a better profit for May, but so far the optimism has not been justified. There was some small business in Robinson Deep A and B shares, without appreciable change. Diamonds have suffered a check, and at one time Consolidated Diamonds looked very weak, but they have since recovered. The set back was in part due to the delivery of Angola diamonds on a weak market, in consequence of which many people sold Consolidated Diamonds to provide funds. The glut of diamond shares was very apparent. The position has now righted itself. Industrials are notable for the strength of Cements. There has been considerable buying of the shares of the Pretoria Portland Cement Company, and some good inquiry for Cape Cements. Loans and Banks have been quietly dealt in without marked change in prices. The good tonnages and profits expected from the month of May will have a reassuring effect on the market. London is inclined to show signs of returning confidence, probably owing to the anticipation of dividends and also to some extent encouraged by the improving political situation oversea. Here also a more optimistic view is being taken by those responsible for our financial control.

	Fri. 25th.	Sat. 26th.	Mon. 28th.	Tues. 29th.	Wed. 30th.
Anglo American Corp.	24 6	24 3	24 0*	23 9*	23 6*
Apex Mines	6 6*	—	6 6*	6 6*	6 9*
Aurora Wests	6 3*	6 4*	6 3*	6 0*	6 0*
Brakpan Mines	66 3*	67 0*	68 6	68 0+	66 0*
Brick and Potteries	—	3 0*		3 0	4 0*
British South Africa	—		12 0*		12 0*
Bushveld Tins	0 3*	0 3*	0 3*	0 3*	0 3*
Cinderella Consolidated	3 0*		3 0*	3 0*	3 0*
City and Suburbans	3 0+	3 0+	2 6*		2 11+
City Deeps	51 3	52 0	51 6*	52 9*	52 6*
Clydesdale Collieries	—			17 3+	17 3+
Consolidated Diamonds	21 1½	21 3*	21 0	19 7½	20 0*
Consolidated Investments	—				29 0*
Con. Main Reefs	9 4*	9 4	9 3*	9 1*	9 1*
Coronation Collieries	30 0*	30 0*	30 0*	30 0*	—
Coronation Freeholds	0 6*	0 6*	0 7+	0 6*	—
Coronation Syndicates	6 0*	6 0*	6 9	5 10*	5 9*
Crown Diamonds	6 5	6 6*	6 6	6 4	6 3*
Crown Mines	50 9*	51 3	51 0*	51 3	51 0*
Daggafontein Mines	3 0*	3 1*	3 1	3 1*	3 1*
Durban Roodepoort Deeps	16 3	16 3*	16 0*	16 1	16 0
East Rand Coals	1 6+	1 3*		1 3*	
East Rand Deeps	0 9	—	0 7*	—	0 6*
East Rand Minings			10 0+	—	10 0+
East Rand Proprietary	5 9*	6 0	5 9*	5 9*	6 0+
Eastern Golds	0 4*	0 5	0 4*	0 4*	
Ferreira Deeps	7 6+	7 6+	7 6+	7 6+	7 6+
Frank Smith Diamonds	3 6	3 6*	4 0+	3 3*	3 1*
Geduld Proprietary	62 6*	62 6*	62 0*	61 6*	61 6*
Glynn's Lydenburgs	13 6				13 6
Government Areas	110 6*	111 0	110 0	109 6*	109 6*
Hume Pipes	8 6	8 6*			8 0*
Knight Centrals	5 9*	5 9*	5 9*	5 9*	5 9*
Lace Proprietary	8 3*	8 3*	8 0*	8 0*	8 0*
Langlaagte Estates	20 3	20 0	20 6	20 3*	20 7½
Leeuwpoort Tins	2 9*	2 9*	2 9*	2 6*	
Middelvlei Estates	1 0*	1 0*	1 0*	—	—
Modder B.'s	24 9	24 6*	24 9*	24 9*	24 9*
Modder Deeps	43 7½	43 9	43 6*	13 6*	43 6*
Modder Easts		6 4	6 4	6 3	6 3*
Natal Navigation Colls.	27 6*	27 6	27 6*	27 6*	27 6*
National Banks	175 0*	165 0*		170 0+	167 6+
New Eland Diamonds	45 0	45 0*	44 0*	45 0	41 6*
New Era Consolidated	6 6*	6 0*	6 9*	6 9*	6 9*
New Kleinfonteins	4 6	4 3*	4 5*	4 0*	4 7*
New Modderfonteins	78 6*	79 0*	78 6	78 0*	78 0*
New Primrose	2 0	2 0	2 0*	3 0*	
New State Areas	36 6	35 6*	35 0	35 0*	35 0
Nigels	8 3*	8 6*	8 6*	8 6*	8 3*
Nourse Mines	14 3*		14 1		14 9
Pretoria Cements	41 3*	41 0	40 6	41 0	41 6*
Rand Nucleus	0 11*	0 11*	0 10*	0 11*	0 11*
Randfontein Estates	20 0*	20 3	20 1½	20 0	19 9*
Rouxville Diamonds	1 3*	1 3*	1 3*	1 2*	1 0*
Roberts Victors	7 6*	7 6	7 6*	8 0+	—
Robinson Deep "A"	35 5	34 9*	34 6*	35 0	35 0*
Robinson Deep "B"	11 2	11 6*			11 0*
Rooibergs		3 0*	3 3*	3 3*	3 0
Rose Deeps	6 0*				
Simmer and Jacks	3 1	3 0*	3 1*	3 1*	3 0
S.A. Breweries	33 0+	31 0*	31 6*	32 9+	32 9+
S.A. Lands	5 9	5 7	5 7*	5 7	5 6*
S.A. Reserve Bank	£137+	£136+	£136	£137+	£137+
Springs Mines	48 0*	47 6	—	—	47 9*
Sub-Nigels	9 3*	9 3*	9 3	9 3*	9 3*
S.A. Alkali	14 3*	14 3*	14 3*	14 3*	14 3
S.A. Townships	11 0	11 0*	11 0*	11 0	11 3*
Transvaal G.M. Estates	8 6*	8 7*	9 0*	9 0*	8 10*
Transvaal Silvers	15 6*	15 3*	15 3*	15 0*	15 3*
Tudors	—	0 6+	—	—	—
Union 5 per cent.	£101½*	£101	£102	102	£102½*
Van Dyks	1 6+		1 6+	1 6+	
Van Ryn Deeps	68 0*	69 0+	67 6*	67 0*	67 6*
Van Ryn Estates	16 0+				
Village Deeps	12 6*	—	12 0*	12 0*	12 3*
West Springs	19 3*	19 0	19 0	19 0	18 9*
West Rand Consolidated	—	6 0+	—		
Western Rand Estates	3 0	2 9*	—	2 6*	2 9*
Witbank Collieries	30 0*	30 0*	30 0*	30 0*	30 0*
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* Buyers. † Sellers.

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Letters to the Editor.

NATAL AMMONIUM LIMITED.

To the Editor, S.A. *Mining and Engineering Journal.*

Dear Sir,—With reference to the paragraph in your last issue regarding the above, I may say that the reference to Natal Ammonium, Ltd., is somewhat premature. Negotiations are proceeding with the Collieries Groups for the supply of small coal, but it is as yet too early to make any definite statement.—Yours faithfully,

S. C. WADDINGTON,
(pp. General Manager),
Natal Ammonium Ltd.

[We gladly give Mr. Waddington's letter the same prominence given to the statement he qualifies.—Ed. J.]

"THE LURE OF THE DIAMOND."

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—I have just noticed an article in your issue of the 19th ult., headed "The Lure of the Diamond," by Christian Zeal. It contains a very misleading and damaging reference to the various groups of diamond mines or pipes, which, I think, should be at once corrected. Permit me to do so even at the risk of trespassing somewhat lengthily on your valuable space.

Your contributor tabulates the groups under six well known names and in every instance gives incorrect figures relating to the "diamond bearing" mines of the said groups. For instance:—

(1) Kimberley group is said to contain 19 pipes, "four being diamond bearing." Allow me to point out at least five pre-eminent mines of great value, all of which have produced millions of pounds worth of diamonds, viz.: De Beers, Kimberley, Dutoitspan, Bultfontein and Wesselton. But we have in addition the following well known proved diamond bearers of that group:—Otto's Kopje, Kamfers Dam, Belgravia, Spytfontein (or Wimbledon) and several others less important. This group contains at least 13 diamond bearers, not four as stated.

(2) Koffyfontein group, 17 pipes, "one diamond bearing." Against this is Koffyfontein mine, also Ebenhaezer, Klipfontein, Twyfelhoek, Ringtepoort and Zwartrandsdam, in addition to several less important.

(3) Jagersfontein group, eight pipes, "one being diamond bearing." Here we have the great Jagersfontein mine which towers well above any others, but it is not the only diamond bearer. There are the Vogelfontein, Rondefontein, and other small occurrences.

(4) Boshof group, 11 pipes, "three being diamond bearing." The three leaders are Roberts Victor, New Eland and Blaauwbosch, but there are several other small diamond bearers, such as Katdoornpan (Roden) and Loxton's Dal.

(5) Kroonstad group, nine pipes, "one diamond bearing." Here is the Voorspoed, the old Lace or Crown mine, Bester's Kraal, Baltimore, and a small occurrence on [illegible], once known, I believe, as the old "Driekopjes." That is five only. I don't know of the four other "pipes" mentioned and I am pretty well acquainted with that area.

(6) Pretoria, 12 pipes, "one being diamond bearing." Against this is the Premier, Schuller, Kaalfontein, Montrose (3 mines), Zonderwater and Kleinzonderhout, making nine diamond bearers.

To judge from your contributor's remarks and figures one would be led to believe the chances of finding more than one diamond bearing mine in a group were small indeed, whereas my figures show the reverse to be the case.—I am, etc.,

H. S. HARGER.

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INDUSTRIES SECTION.

SOUTH AFRICA'S NEW DEVELOPMENTS—OPPORTUNITIES FOR THE "SMALL MAN"—CALL FOR PLANT AND MACHINERY—SPHERE FOR BRITISH MANUFACTURERS—COTTON CROP MAY EQUAL GOLD OUTPUT.

It it now generally agreed that South Africa has reached a stage in its industrial development that furnishes a field for manufacturing enterprise extending far beyond the requirements of the mines. These, of course, remain the premier industry and backbone of the country; but, as has been insisted upon in these columns and by other authorities, South Africa cannot hope to be for ever supported on their broad back. There are other mineral resources of almost incalculable value in the country; agricultural development has scarcely commenced, so far at any rate as the application of modern methods and scientific research are concerned; manufacturers are making very encouraging progress, and—given a sympathetic Government policy, helpful railway administration and other transport facilities, and a reasonable attitude on the part of labour—South Africa should witness in the next few years a period of industrial expansion unsurpassed in its own history and, possibly, in that of any other unit of the British Empire.

The South African Mining and Engineering Journal is fully alive to these possibilities, and in this section it is proposed to deal with the progress and prospects of the country's industrial development. This development, however rapidly it may materialise, will not for many years to come, lessen our dependence on outside sources of supply. Rather it will increase that dependance. In these days industrial development is largely a matter of machinery, and not for very many years to come will South Africa be in a position to challenge the supremacy of the older countries whose experience of generations in this respect is at the service of the younger countries. The dream of a self-contained and self-sufficient South Africa is very far from realisation.

Herein, of course, is the opportunity for British manufacturers. Are they alive to it? There is no question as to the alertness of their American competitors, and even Germany is once more becoming very much in evidence in our imports statistics. South Africa will unquestionably offer a splendid field for the enterprising manufacturer of machinery in the coming years. The field is so wide and varied in its potentialities that it is difficult to particularise, but of late attention has been more especially directed to the possibilities of cotton growing. Corner House interests are far from indifferent to this comparatively new sphere of activity. At the recent meeting of the Transvaal Consolidated Land Company, Mr. F. R. Phillips alluded to the world shortage of cotton and America's diminishing output and, pointing the moral, said: "Here, then, is apparently an opportunity for the Transvaal and Natal to make up some of the world shortage. There are in these territories approximately four million to five million acres of land suited to the production of cotton, with rainfalls of sufficient dependability to ensure crops. If an average of 150 lbs. of lint per acre can be produced on this acreage, there would be an industry producing, at 1s. per lb., a yield in value nearly equal to the value of the Transvaal gold output. A great deal of anxiety is being exhibited on the part of the English cotton spinner as to where his supplies of raw materials are to come from in the near future, and his emissaries are scouring the world just now in search of new possible sources of production."

Those who have studied the matter estimate that South African cotton can be landed at Liverpool at about 6d. per lb., whereas American cotton cannot, it is said, be offered there at less than 9d. or 10d., and recently as much as 1s. to 1s. 3d. has been paid. Here is a splendid opportunity for South African farmers and others looking for a new sphere of remunerative employment and investment. It is an opportunity not only for the "big fellows" who are the pet aversion of the Provincial Councillors in their suicidal attacks on capital—attacks which, however, are likely very soon to demonstrate their utter futility, and to be abandoned. It is not perhaps sufficiently recognised that cotton cultivation can be engaged in with the outlay of comparatively little capital, and with far less risk than that incurred in most other agricultural enterprise, provided, of course, that the location selected is suitable for the purpose

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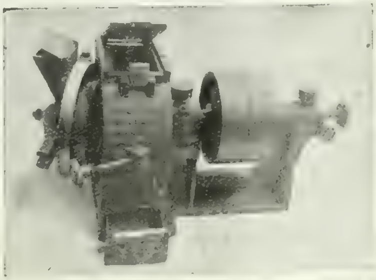

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In this matter the prospective cotton grower has the advantage of expert advice which can be placed at his disposal through the medium of the Cotton Trade Commissioner. This Department, it may be mentioned, has foreseen the enormous possibilities of this new industry, and its representations to the Home authorities have been sympathetically received, with the result that those who are embarking on this enterprise will find both the British and the Union Government Departments extremely helpful. It cannot be said that the British manufacturers of machinery have as yet made any determined bid for this new business, but they are undoubtedly being educated up to its possibilities.

In this important work Mr. J. Lloyd, a mining and machinery merchant well known in Johannesburg engineering circles, is actively interesting himself. Realising that cotton cultivation is one of the big things of the near future in this country, Mr. Lloyd has been doing a lot of propaganda work lately, and it will not be his fault if two, at any rate, of the principal British firms who specialise in the manufacture of cotton gins and other machinery for cotton processes, do not show South African growers the extent of British resources in this matter.

Discussing South African requirements with a representative of the "S.A. Mining and Engineering Journal," Mr. Lloyd said: "The lay-out of the plant needed in this country is of the automatic type—plant that will suck up the cotton seed as it is picked, from the wagon, pass it through the gins into condensers, and straight into the baling press, in one operation. There is such machinery available, which would run with a minimum of labour and ensure clean cotton."

Small hand power plants are available for the man who commences cotton growing on the most moderate scale, or the farmer who adds this profitable "side line," and an expenditure of even £100 on such a modest beginning would reveal the possibilities of this industry to such a degree that it may confidently be predicted that very considerable extensions would very soon be laid down. In the Pongola district one grower who has about 2,000 acres under cultivation is said to be showing a profit of over £15 per acre. Mr. Lloyd has already received quite an encouraging number of inquiries, and is submitting suggested "lay-outs" for the small man, and for those with a moderate amount of capital who, with a few others equally enterprising, hope to raise £10,000 or £20,000 for more ambitious undertakings. In some cases water-power is available, in others steam, raised by wood fuel, is suggested. Some growers would be content with the installation of a gin and crusher—for from the seed valuable oil and cattle feeding cakes are, of course, obtainable—and would send the cotton, bagged or loosely pressed, to another centre where more powerful baling presses are installed. On a bigger plantation the complete plant for ginning, crushing, oil extraction, and baling would be a very profitable proposition. But whatever the extent of the plantation, Mr. Lloyd and his principals will be in a position to provide all the necessary equipment. Mr. Lloyd is not, of course, the only agent who is in a position to deal with this business, but he may certainly claim to be a pioneer, and he is most anxious that British firms shall be in at the beginning of what he is convinced is going to prove one of the biggest of South African developments.

Probably one of the most effective ways in which the manufacturers of the machinery could bring home to the farmers and others interested a realisation of the comparative cheapness and simplicity of the processes of cotton production would be the provision of a small demonstration plant to be taken round the districts suitable for cotton growing and for exhibition at the various agricultural shows, etc. This matter, and a general publicity campaign, is, we understand, already under the consideration of certain British firms, and it has certainly not been lost sight of by their American rivals.

In the last few years remarkable progress has been made in cotton cultivation in the Union, as shown by the following figures:—

Cotton (Seed) Grown in the Union, 1917-18 to 1920-21.

Year	Cape	Natal	Transvaal	O.F.S.	Union.
1917-18:—					
Area (acres) ...	34	512	7,016	13	7,575
Yield (lb.)	6,800	113,700	676,110	—	796,610
1918-19:					
Yield (lb.)	1,906	533,184	883,321	200	1,418,611
1919-20:					
Area (acres)	87	4,436	6,932	10	11,465
Yield (lb.)	17,900	1,073,400	1,494,900	6,000	2,592,200
1920-21:					
Area (acres)	118	2,773	16,193	—	19,084
Yield (lb.) ...	11,290	862,600	2,702,600	—	3,576,400

Rhodesian Mineral Output.

The following is the official summary of Rhodesian mineral production for April, 1923:

	Value.
Gold, 53,200·29 fine ounces	£232,765*
Silver, 12,488·99 fine ounces	1,295
Coal (raised, 44,494 tons), sales	14,490
Coal (used for Coke and Bricks)	4,089
Copper (Blister), 251·30 tons	15,148
Chrome Ore, 6,593·49 tons	16,674
Asbestos, 1,693·50 tons	39,208
Arsenic, 65·39 tons	2,254
Mica, 7 tons 103 lbs.	1,763
Diamonds, 34·75 carats	274
Total	£372,960

*Includes £8,344 gold premiums.

The Westinghouse Electric and Manufacturing Company, of Pittsburgh, Pa., U.S.A., announce that they have just entered into a contract with the Virginian Railway Company for the complete electrification of the line between Mullens and Roanoke (in the State of Virginia), comprising 134 route miles and 215 miles of track. This line will handle a very heavy coal traffic with 6,000 ton trains up about a 2 per cent. grade, and 9,000 ton trains over the rest of the line. The contract includes the supply of 600 ton split-phase 25 cycle 11,000 volt locomotives of the most powerful type ever contemplated. The total contract, including a 50,000 Kw. power house, amounts to $15,000,000, and is the largest railway electrification in the world to date.

Messrs. Barnato Bros. and the Hollinger.

In an official statement sent to the Press Messrs. Barnato Brothers emphatically contradict the statement published in London that a member or representative of their firm has been engaged in negotiations for the acquisition of the control of or of an interest in the Hollinger Gold Mines. There is no foundation for the suggestion that Barnato Brothers intend acquiring any interest in the Porcupine district of Northern Ontario.

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ENGINEERING SECTION.

Drill Steel; A Subject of Vast Importance to the Witwatersrand Mines.

ITS FORGING, HEAT TREATMENT AND TEMPERING.—SOME VALUABLE ILLUSTRATIONS.

By H. S. Brainerd.

II.

If the austentite (carbide in solution in gamma, non magnetic iron) could be quenched instantaneously so that the critical change on cooling could not take place, the solid solution would be preserved at atmospheric temperature. The steel, however, cannot be quenched quickly enough to preserve this constituent, and other transitional constituents form according to the rapidity of the quenching and the degree of suppression of the "Ar" 3 2.1 cooling change. The transition constituent, martensite, will form if the steel is quenched very rapidly (in cold water or brine) from a temperature *sufficiently high enough above the critical temperature* so as to cause the rate of cooling through the critical temperature to be faster than the "critical rate" of cooling. If the rate of cooling through the critical range is slower than the "critical rate," the other softer transition constituents, troosite or sorbite, will form. The correct temperature for hardening 0·85 per cent carbon drill steel in water, with martensite as the desired microconstituent, is not judged from the critical temperature or the loss in magnetism: they are factors which prescribe the temperature *above* which the steel must be heated. The actual temperature or degrees above the critical temperature is determined by the mass of the piece, its shape, the distance from the cooling bath, the cooling medium, etc.

The influence of the temperature upon the grain of steel is shown in Fig. 5 by a variation of the Metcalf test. A bar of ⅞-inch hollow hexagon drill steel was heated at one end to the melting temperature, which is about 2700 degrees Fahrenheit, while the other end was at atmospheric temperature and the intermediate regions at proportionate temperatures. The piece was quenched in cold water, split lengthwise with a very thin emery wheel and broken for fracture. The grain size produced by any temperature can be readily seen. Examination was also made of the structure under a microscope. This metallographic examination shows the internal structure after etching with picric acid in alcohol. Fig. 6, at 90 diameters, shows an average structure of pearlite with some thin fibres of slag and oxide. Fig. 7 at a magnification of 500 diameters, shows the pearlite to be distinctly lamellar. Fig. 8, at 90 diameters, shows the structure of that part of the steel which was quenched while in the critical range. The dark etching areas are martensite or martensite and troosite, while the lighter material is in the nature of sorbite. Fig. 9, at 500 diameters, shows the martensitic structure in the dark etching areas. Fig. 10 consists entirely of coarse martensite. It is shown in detail in Fig. 11 at 500 diameters. This grain is overheated but can be restored by reheating to a temperature slightly over the critical temperature and then by cooling in air or oil. Fig. 12 shows very coarse martensite with intergranular cracks due to quenching action and temperature. Steel which has been heated to this stage cannot be restored because the cohesion between the grains

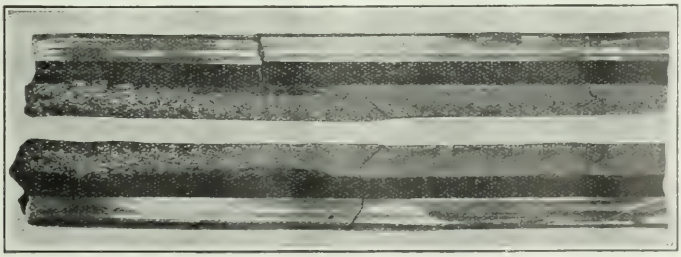
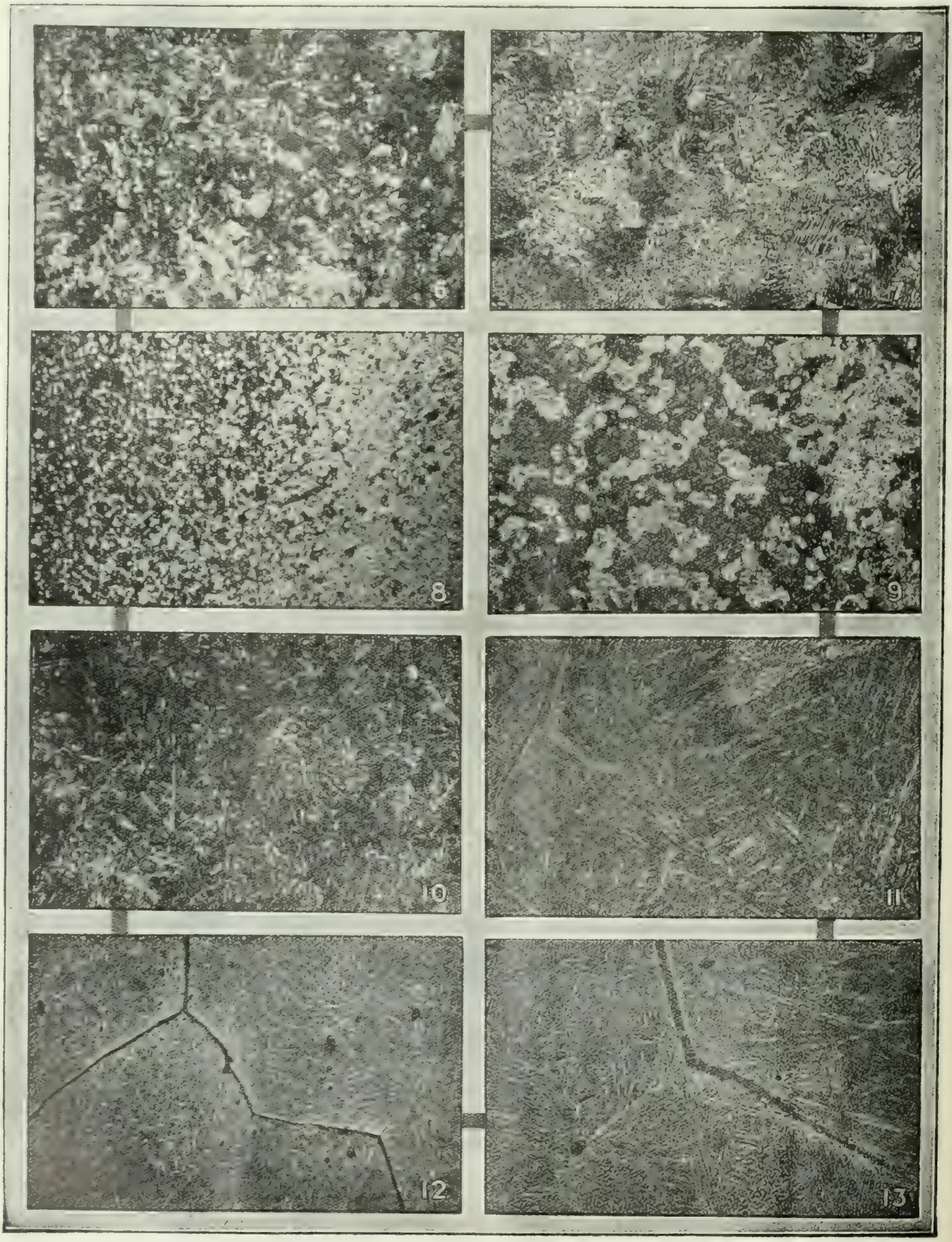


Fig. 5.—Effect of quenching temperature upon the grain size.

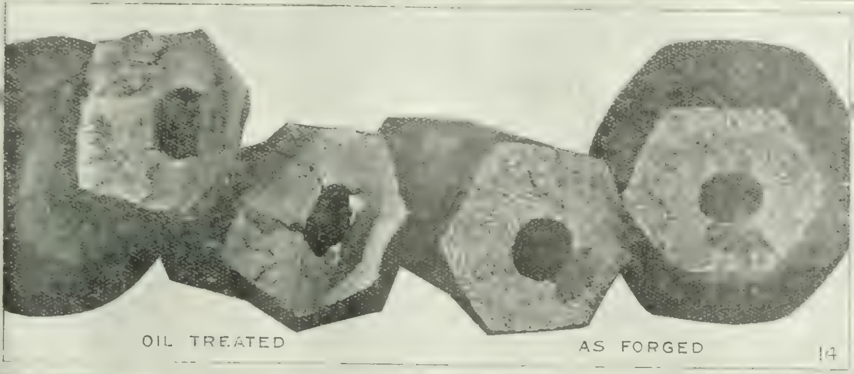
*		**	***			****
Black	Dull Red	Cherry Red	Orange	Lemon Yellow	White	Scintillating White
600°F.	1200°F.	1400°F.	1600°F.	1900°F.	2200°F.	2600°F.

* —Not heated. Location of Figures No. 6 and No. 7.
** —Quenched in critical range. Location of Figures No. 8 and No. 9.
*** —Quenched above critical range. Location of Figures No. 10 and No. 11.
****—Quenched at melting point. Location of Figures No. 12 and No. 13.

STRUCTURE OF DRILL STEEL AS REVEALED BY THE MICROSCOPE.



EFFECTS OF HEAT TREATMENT ON GRAIN STRUCTURE OF STEEL.



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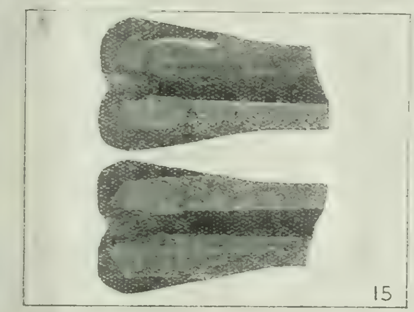

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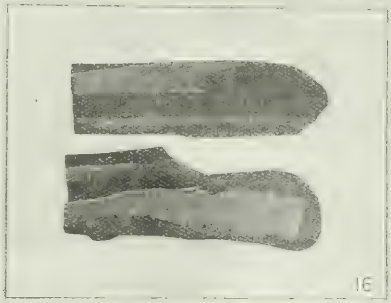

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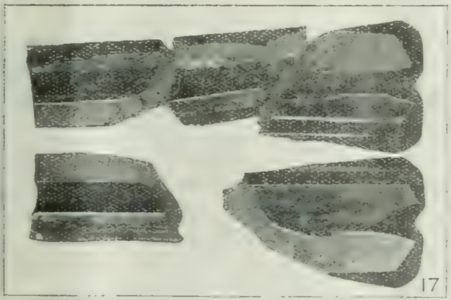

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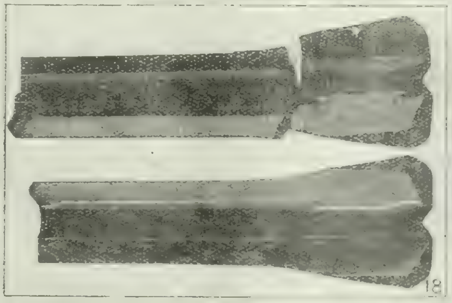

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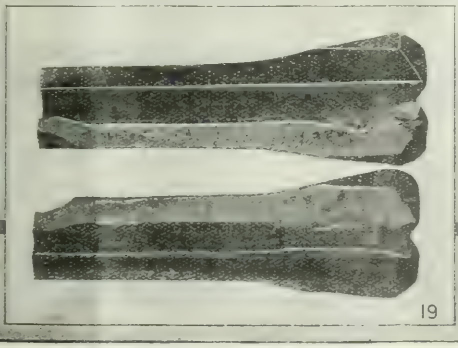

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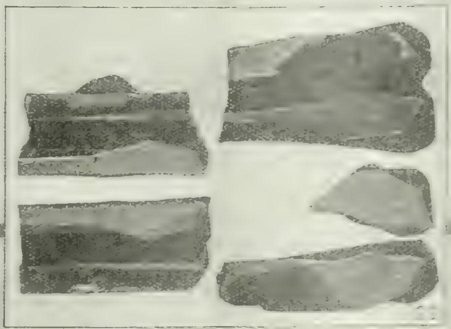

has been destroyed. The [illegible] spots in the structure are due to the [illegible] of the [illegible]. The [illegible] of Fig. 12 are shown in Fig. 13 at 500 diameters.

Little or no attention is ever given by the average user to the heat treatment of drill steel. It is believed that considerable economy may be effected in the mine by the proper heat treatment of drill steel, inasmuch as the influence of the proper treatment of both shanks and bits upon the life of the piston drill parts and drill steels cannot be overestimated. The hardness obtained by quenching drill steel from a suitable temperature in water, brine, alkaline water, and rain water will vary but little. If the volume of the quenching medium is small and a large number of pieces are quenched in it, a different condition arises, as the hardness obtained depends upon the cooling powers of the quenching medium. The cooling power of water falls off with a rise in temperature of the water, and over 100 degrees Fahrenheit it is seriously affected. Brine at this temperature has approximately the same cooling power as at a much lower temperature. Almost any kind of water will successfully harden drill steel provided it is used in sufficient volume at a satisfactory temperature.

Such oils as the No. 2 Soluble Oil from the E. F. Houghton Co., and the Matchless Quenching Oil of the Atlantic Refining Co., are very satisfactory for quenching purposes. These oils have a good quenching speed, do not have an objectionable odour, do not decompose or depreciate with use, and have the same quenching speed at all temperatures up to 250 degrees Fahrenheit. The oils have a specific gravity of about 29 degrees Bé., a flash point of 350 degrees Fahrenheit and a fire test of 370 degrees Fahrenheit. It is very necessary that the right grade of oil be used for quenching purposes. Oils which are too heavy require too high a quenching temperature to obtain the correct hardening, while oils which are too thin make the steel too hard and brittle.

After continuous use, due to deposit of burnt slag and oil from the steel, the quenching oil will in turn become dirty. This can be remedied in the following manner. Place water amounting to one third the volume of the oil in the bottom of a separate tank, adding the dirty oil without any attempt at stirring. This cleaning tank should be provided with a spigot in the bottom and a spigot six inches above. Allow to stand for 48 hours at a temperature of 160 degrees to 180 degrees Fahrenheit. The clean oil will be at the top of the tank, the water will settle to the bottom, and between the good oil and the water there should be a sludge. Draw off the water from the bottom spigot and allow the sludge to fall below the top spigot. Draw off clean oil from the top spigot. Care should be taken not to leave any water in the mixture.

Drill shanks should be hardened at 1170 degrees Fahrenheit in quenching oil such as has been described above. This temperature is recommended for the ⅞-inch hollow hexagon steel, but for shanks with a larger section a little higher temperature should be used to take care of the increased section of the steel. The benefit derived from quenching the shanks in oil may be seen in Fig. 14. The coarse character of the fracture of one of the shanks has been induced by the forging heat, and this shank broke with very little deformation. The other oil-treated shank has a fine fracture, is very tough and suffered considerable deformation before it broke.

There are many methods of hardening drill steel bits, and the following data show a comparison of six methods. The comparatively high forging temperature, 1900 degrees Fahrenheit, which is required in order that a bit may be formed easily, quickly and economically, gives a coarse grain which is weak, and this should be removed by heat treatment. Fig. 15 shows the appearance of a fracture of a bit which has been heated to 1440 degrees Fahrenheit, for ¾ inch from the teeth, and quenched all over in brine. The fine-grained structure near the teeth as been produced by the hardening operation and is very hard. The coarse grain in the remainder of the piece has been caused by the forging temperature and has not been affected by the hardening operation. Fig. 16 shows a bit which has been heated to 1600 degrees Fahrenheit for ¾ inch from the teeth and quenched all over in brine. The coarse grain structure near the teeth has been produced by the hardening operation. It is not as hard as that shown in Fig. 15, and is much more brittle and non-resistant to shock. The coarse grain in the remainder of the piece is due to the same cause as that in Fig. 15, that is, the forging temperature. The high hardening temperature has caused the bit to crack. This crack was not visible before fracturing the bit.

Fig. 17 shows a bit which has been heated to 1440 degrees Fahrenheit for the same distance from the teeth that it was heated for forging and quenched all over in brine. The reheating has entirely destroyed the coarse grain left by forging. On the extreme left the grain of the original bar is seen. The remainder of the steel is encased in a fine-grained, thoroughly refined zone of very hard metal. A thin core of toughened grain structure is seen around the hole. This is not sufficient to prevent the steel from breaking back of the bit; and this method of heat treatment is not recommended. Fig. 18 shows a bit which has been heated to 1600 degrees Fahrenheit in a manner similar to that shown in Fig. 17. The high heat has caused the steel to harden through all sections, leaving a coarse crystalline grain which is very hard and brittle. The resistance to failure of this structure is very small, and the specimen very easily separated into two pieces. The embrittling effect of this higher temperature can be seen by comparing this fracture with that of Fig. 17. The latter, although very hard, had to be broken several times to obtain the full length of fracture. This method of heat treatment is not recommended.

Fig. 19 shows a bit that was heated to 1440 degrees Fahrenheit, at the same distance that it was heated for forging, and only the teeth quenched in brine. The reheating has entirely destroyed the coarse grain left by forging and replaced it with a fine, tough grain structure. The toughness of the structure can be seen by the manner in which it broke. The teeth have been given maximum hardness but resistance to service stresses is also at a minimum. This method of hardening is recommended. Fig. 20 shows a bit which was heated to 1600 degrees Fahrenheit in the same manner as the bits shown in Fig. 19. The extremely coarse grain left by forging has been destroyed and replaced by a grain which is sufficiently coarse to be unsuitable. Note the smooth manner in which this piece broke, comparing it with the "tough" appearance of Fig. 19. The high heat has caused the bit to fracture and has produced a coarse-grained, brittle, hardened zone extremely liable to fracture. This temperature is too high for satisfactory results.

(To be Continued.)

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The Purification Plant of the New Vaal River Scheme.

From a valuable and interesting paper read by Mr. W. Ingham, M.I.C.E., M.I.Mech.E., Chief Engineer, Rand Water Board, we take the following extract, giving a description of the purification plant at the Vereeniging Main Station of the Board's Vaal River Scheme.

The water from the river intake station, before being delivered into the sedimentation tanks, is treated with sulphate of alumina, and the water is then run along a trough arranged with baffles, so that thorough mixing takes place. The water then enters the sedimentation basins, four of which have been constructed to deal with a total of six million gallons per day. The sedimentation tanks are 225 feet long, 75 feet wide, and have an average depth of above 8 feet; the capacity of each tank is 800,000 gallons.

The slow passage of the water through these tanks enables the flocculent precipitate, caused by the sulphate of alumina, to settle to the bottom, and to carry down with it the greater portion of the suspended matter and bacteria. It is anticipated that over 80 per cent. of the bacteria will be removed in the tanks by adding from 1½ to 3 grains of sulphate of alumina per gallon of water. When the water leaves the sedimentation tanks it is passed through a set of eight Paterson filters, and the clear water from these filters is collected in a small reservoir situated in the basement under the central portion of the filter house.

The filter plant is of the rapid gravity type and the water is passed through a bed of sand and gravel and collected by means of a pipe network known as a manifold. The finely divided flocculent precipitate which does not settle in the sedimentation tanks is retained on the sand bed. After a certain length of time, the duration of which is determined by the quantity of silt in the water, the efficiency of the sand bed becomes impaired, and it is necessary to wash the sand. This is effected by shutting off the raw water, draining off the water above the sand, and then blowing back, through the manifold, a large volume of compressed air and water. Immediately after the air is shut off, water under head of 30 feet is passed through the manifold and upwards through the sand bed, this thoroughly washes all the particles of sand, and the dirty water is run to waste into the sump below the filters. After a short time has elapsed the wash water is shut off and the filter is started again. The pipe arrangement is such that the first discharge from the filters after washing can be run to waste, and as soon as the water is clear it will be turned into the collecting reservoir. The whole of the filtration plant, in addition to the chemical feed apparatus, is being supplied by the Paterson Filtration Company, through Messrs. Blane & Co., of Johannesburg. The outlet from the filters is controlled by a float valve which automatically restricts the flow through the filter if the quantity is greater than a certain predetermined figure.

The chemical feed apparatus is for the purpose of introducing sulphate of alumina and lime, if necessary, into the raw water before it reaches the sedimentation tanks. The apparatus is controlled by a Venturi tube inserted into the pipe line, so that any difference in flow automatically affects the apparatus and discharges more chemical if the quantity of water increases, or restricts the quantity of chemical if the quantity of water decreases.

Two sets of centrifugal pumps are installed in the filter house; these pumps raise the water from the collecting reservoir in the basement to a clear water reservoir having a capacity of five million gallons. The pipe line to the large reservoir is 24 inches in diameter, and a by-pass is arranged so that all or any portion of the water can be diverted through the condensers in the main engine-house and thence to the large reservoir. After the clean water leaves the condensers it will be sterilised with chlorine if found necessary.

Determination of Mine Air Dusts.

A new type of instrument for collecting samples of dust from mine air has been developed by the United States Bureau of Mines. This instrument is considered to have several advantages over the "sugar-tube" type. The instrument is now being tested in the zinc mining district of North-Eastern Oklahoma. The Bureau of Mines, in cooperation with the United States Public Health Service, is engaged in a general study of the physiological effects of dusty mine atmospheres on mine workers.

SAFETY IN HANDLING MATERIALS.

Safe Practices Pamphlet No. 54, entitled "Handling Material," has just been published by the National Safety Council, 168, North Michigan Avenue, Chicago. Handling material is generally recognised as one of the greatest safety problems in industry, and according to state reports handling material by hand causes more accidents than all machinery. The pamphlet is divided into the following main divisions: Power trucks, hand trucks, piling material, handling by hand and safe habits of work, each of which is again subdivided into paragraphs dealing with the different types of equipment used and the different methods employed in handling various types of material. The pamphlet is freely illustrated with photographs and diagrams. A large number of industries is covered, and owing to the fact that handling material is common to every industry, the pamphlet has an unusually wide range of usefulness. The experience of many members of the National Safety Council was contributed in the preparation of the pamphlet and the assistance of a committee of 75 safety engineers was employed in editing and revising the material.

Bulawayo Gold.

In a window at Cartwright's Corner (says the "Cape Times"), there are some very interesting specimens of gold-bearing rock, which have come from the property of the Newtonfontein Associated Mines, Ltd., situated 27 miles due north of Bulawayo. This company was registered in Southern Rhodesia last month. A considerable amount of prospecting and development work has already been done on the properties, with encouraging results, and half of the claims are now being further developed. The public are being invited to subscribe. Mining in Rhodesia has many interesting possibilities, and is not, of course, free from the element of speculation.

BALKIS, LTD.

BANGWAKETSI AND KANYE CONCESSION.

Licences to prospect on the Company's Concessions in Bechuanaland can be obtained of the Company's Prospecting Agent:

D. P. C. BLAIR (P.O. Box 1917),
1, Sauer's Buildings, Loveday Street,
JOHANNESBURG,

by whom all particulars will be furnished to intending Prospectors on application.

The licences are framed in simple form with revised conditions, which are most favourable to Prospectors.

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS STILL QUIET BUT PROSPECTS MORE HOPEFUL—IRON AND STEEL—EUROPEAN POSITION CONSIDERED MORE FAVOURABLE—METAL QUOTATIONS.

General.

Business this week has again been slow, and the usual end of the month flutter has not occurred. This, however, in view of the present month's stock-taking responsibilities, is not surprising. It must not be forgotten that June's commitments are usually carried forward to the next month of the financial year of traders, and it is within the ken of some that the present month, loaded with such responsibilities, has proved itself not one of the worst of the twelve. Although there is no improvement to report in business conditions generally, there appears to be a feeling in commercial circles that bed-rock has undoubtedly been reached, and that from now on we can only see better conditions. Reports from the coast and from the Union as a whole confirm this belief. Commercial circles are imbued with the idea that we are going to see shortly a way out of the present impasse in Europe in respect of the Teutonic tangle. At any rate the recent change of Government in Britain is looked upon by commercialists as foreshadowing more stable conditions in European polity. There can, in the opinion of commercial circles here, be no doubt that the recent offer of Germany in respect of her obligations will be supplemented later by conditions which will enable her to get out of the rut and save the Allies' face. France's position in the Ruhr now appears clearer. There can now be no question of her willingness, under conditions, to withdraw from that region, and those conditions are to-day less rigid than they were a few months ago. President Poincaré's recent statements regarding Ruhr affairs leaves us somewhat intrigued, but commercial circles here are fairly assured that the French "Prussian" regime *ist nicht am platz*. In the view of a foremost commercial man, we need only a little more patience to see a change for the better in present business conditions. Engineering shops are keeping fairly busy, and looking forward to better times, which appear to be very promising. The figures just published by the Town Council regarding building activities are really startling, and show the improvement therein during the past year when over £2,000,000 have been expended in new erections here during the past ten months one can have no fear of Johannesburg's prosperity. Prices are, on the whole, much about the same, but should a settlement occur in Europe, which is not at all unlikely, they are bound to recede.

Iron and Steel.

Business has ruled exceptionally quiet this week, nor in view of the present stock-taking month is it at all surprising.. Hopes are high as to future betterment.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s., cheques plates, 27s. 100; lb.; imported flats, ½ x 3-16, ⅝ x ⅛, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ¼, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ¼, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag, 2s. 8d. per lb. Phosphor tin, 2s. 10d. per lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in., 10s. 9d. to 11s. 6d.; 36 in., 20s. to 22s. 6d.; 42 in., 27s. 6d.; piping ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 60s. and upwards; barbed wire, "Shortthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Britain: Mail Advices.

The Outlook.—The situation has remained practically unaltered this week. Although the offerings of pig iron and steel from Continental sources have been made with more freedom, the prices are generally too high to be attractive to British dealers. There is also a disinclination on the part of many British buyers to enter into engagements with Continental firms owing to doubts regarding their ability to deliver. British steel manufacturers' prices, for the most part, have been maintained. New business continues to be scanty. The belief that a settlement of the Ruhr difficulties will not be long delayed is still affecting business by delaying the placing of orders, since the general impression prevails that directly a way out of the impasse can be seen prices will show a decline. The greater anxiety shown by French and Belgian manufacturers to book orders is held in some quarters to support the view of the approach of a settlement.

Semi-finished Material.

This market is under the influence of the Continental position, and buyers are holding off as much as possible in the hope of obtaining lower prices in the near future. An order for 1,000 tons of billets and blooms was placed in Belgium recently at a price reported to be about £8 15s. 6d. for billets and £8 7s. 6d. for blooms. British works' quotations are easier at £9 7s. 6d. to £9 12s. 6d. delivered for billets. Continental wire rods of .4 to .5 per cent. carbon and .5 to .6 per cent. carbon have been quoted at £13, and ordinary quality below £11 10s., but no business has resulted.

Finished Materials.

The situation in this market is practically unchanged. Belgian steel bars have been quoted as low as £8 12s. 6d. f.o.b. French works quoted in francs on steel bars at the equivalent of £8 16s. Bids of £8 15s. for ¼in. and 3-16in. plates have been declined, as well as £9 10s. per ton f.o.b. for ⅛in. and 1-16in.

Pig Iron.

While manufacturers are unwilling to accept less than £6 per ton f.o.b. for No. 3 foundry, consumers will not place large orders at this price, except when compelled by their necessities. Very little iron is obtainable except for forward delivery. Continental iron has been offered, but practically no business has passed, as most of the producers on the Continent are asking £6 8s. to £6 10s. f.o.b. for foundry or basic, while buyers' bids are about £1 less. Continental merchants have offered basic iron as low as £5 5s. f.o.b., but on rather vague terms of delivery, with the result that no business has taken place. At the weekly meeting of the London Iron and Steel Exchange this week the amount of business transacted was light. It was reported that some good-sized orders were being held back in the belief that the situation would become easier. Opinions varied as to the likelihood of lower prices, but there was everywhere a reluctance to enter into commitments in the present state of the market.

Rumoured Amalgamations of Steel Producers.

Several rumours have been in circulation of late regarding the amalgamation of various firms of steel producers. One of the most interesting was to the effect that negotiations were proceeding between Baldwins, Limited, and Guest, Keen and Nettlefolds, Limited. A similar rumour found currency on the Stock Exchange concerning Furness, Withy & Co., Ltd., and the Cargo Fleet Iron Co., Ltd. There is a general tendency among the leaders of the British iron and steel trade to favour the amalgamation of large producing concerns, and it may be remembered that Lord Furness, who is chairman of the Cargo Fleet Co., advocated a few months ago the reorganisation of the British steel industry on lines similar to those of the United States Steel Corporation.

Quotations.

Staffordshire common bars, 14s. 3d.; galvanised corrugated sheets, 23s. per cwt.

Wire, Nails and Sheets.

Galvanised wire in 4-cwt. lots; fencing wire, 1 to 8 gauge, 22s. per cwt.; bundle wire in 7lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 20s. 6d. per cwt.; cut steel nails, 3in. to 6in. clasp, in 2-ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 24s. per cwt.; flat steel sheets, 26s. per cwt.; black, 21s. per cwt. Bolts and nuts, 50 per cent. discount.

Quotations.

Pig iron.—Cleveland, Foundry No. 1, 130s.; No. 3, 125s. 6d.; No. 4 forge, 117s.; mottled, 120s.; hematite, mixed Nos. 125s. Finished iron and steel.—Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £10; hard, £10 15s.; bars and angles, £10; tees, £11, joists and channels, £10 5s.; sheets, singles, £14 10s.; doubles, £15; lattens, £15 15s.; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

Tinplates.

Works are well booked until the end of July and are inclined to accept business below 25s. f.o.b. for 20 by 14 basis.

Galvanised Sheets.

This market has been very quiet. Quotations are still maintained at £19 10s. f.o.b. for 24 gauge corrugated sheets in bundles.

The "Hume" Pipes in Germany.

The Deutsche Hume-Rohren A. G. is being formed in Berlin, with a capital of 100 million marks. The company intends to exploit in Germany the Hume patents for making pipes, which are worked by the Stanton Co. (Ltd.), of Nottingham, and by other companies in France and the United States. It is stated that the British Company will participate in the new German undertaking to the extent of taking one-third of the net profits for the first three years, with the option, at the end of that period, to acquire one-third of the shares at par.

Reduced Railway Rates.

Reductions in railway rates, which came into force on May 1, will bring the carriage on agricultural implements and machinery from 75 per cent. above pre-war level to 50 per cent. above pre-war level.

The Unemployment Barometer.

On April 16, the number of persons recorded on the live registers of the employment exchanges in Great Britain as wholly unemployed was 1,289,500. This was 21,170 fewer than in the preceding week, and 246,378 fewer than on January 1.

America.

Pig Iron.—The output of pig iron is increasing and has reached 95 per cent. of the industrial capacity in Youngstown and the adjacent districts, where 41 out of 46 blast furnaces are in operation. Similar conditions exist in the steel trade, the output being between 90 and 95 per cent. of capacity. The heavy production has now begun to show results in a quieter price situation in the pig iron market, and in the disappearance of premiums on finished steel materials. It is suggested that these symptoms indicate that markets are settling down to steady full operations for the third and fourth quarters of the year.

Pig Iron.—Foundry, Bessimer and basic are quoted at $31 to $32.

Steel.—Buyers are beginning to negotiate for third-quarter delivery. There is a less noticeable tendency to quote premiums. The American Steel and Wire Co. has advanced the price of wire rods $2 to $5, and the large independents are quoting $50, whilst the smaller concerns are asking $55 to $56.

Finished Materials.—The United States Steel Corporation has advanced its prices for plates, shapes and bars, at Pittsburg to $2·50 for bars and $2·60 for shapes. The sheet bar minimum price is $47·50 third quarter delivery. Tin plates are now quoted at $5·50 to $6. Wrought-steel pipe prices show an advance of $3 to $12 per ton. The price of boiler tubes has been advanced $4 to $12, and cast-iron water pipes $2. These advances are generally accepted as indicating a long-continued and steady run of good business.

Suggested International Steel Agreement.

Mr. Charles Schmal, President of the Bethlehem Steel Corporation, in a speech at the British Chamber of Commerce in New York, said that while German efficiency has apparently been destroyed for years to come, the German steel industry would re-enter the steel markets with ruinous competition. He suggested an agreement between the steel makers of Great Britain, France and the United States to [illegible] such destructive competition.

Canada.

The British Empire Steel Corporation has reduced its capital from $500,000,000 to $[illegible].

A New Niagara Bridge.

Work is about to be begun at the new cantilever bridge across the Niagara River. The bridge arch will be of two-hinged spandrel-braced type, and the rail base will be 240 feet above the water level. The total weight of steel required will be about 7,500 tons, and approximately 1,100 cubic yards of cement will be used for the abutments and auxiliary foundations. The American Bridge Company has the steel contract, the price for the steel work erected being about $116 per ton.

Second-hand Machinery.

There has been, said a well-known dealer this week, quite a flutter in orders in second-hand machinery, and particularly in steel plates, which are very scarce indeed. Several mines which had sold their tanks are rather sorry that they have done so, as second-hand steel plate is very scarce, and they have now to purchase new. There are very few orders coming in just now from outside, although there is inquiry for second-hand machinery for two industrial propositions in the Free State, the purchasers for which will have to be satisfied with the best they can get to go on with, and, said this well-known dealer, there is to-day an absence of that feeling which prevailed in the past of picking and choosing. This, of course, has made second-hand machinery easier in price for their requirements, hence the rise in price of new plates lately. As regards other spares, pumps, batteries, engines, etc., these are practically exhausted at the present time, so that the machinery that is likely to be disposed of by the mines anticipating closing down will, it is expected, fetch big prices.

Germany.

The German Government has placed contracts for 3,500 tons of rails each with the Prague Iron Company, of Prague, and the Alpine Mining Company, of Vienna.

Ore Supplies.—Siegerland ores are now arriving in large quantities at the Upper-Silesian works, their delivery to the Ruhr being impracticable.

Australia.

O. P. Lemprière and Company, of London and Melbourne, are erecting their own tin smelters. A site has been obtained near Sydney for the erection of a smelter, where smelting operations will commence at an early date.

Italy.

At the annual meeting of the Ansaldo Steel Company recently held at Genoa, it was decided to reduce the capital of the Company from 500 million to five million lire, and the nominal value of the shares from 250 to 2½ lire each. The meeting was informed that the only alternative to reduction was bankruptcy.

Timber and Building Materials.

Prices, notwithstanding oversea quotations, remain much about the same, with the exception of a few sizes in scantlings, which are short and firm. Stocks of timber are fairly normal, and accessions are on the way. The building trade is prospering, and many important jobs are now in hand. Even bigger developments are confidently looked forward to by experts in the near future.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3½d.; floorings, 6d. to 6¼d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d. to 9d., very firm. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, [illegible] per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d. to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft. 3 ply wood, 3 m m. up to 5 m m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12in., 6s.; 15in, 7s. 6d.; 18in., 9s.; dry red oxide, 14s. per 100lbs.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 51s. for 1 to 3 ply.

Second-hand Iron and Timber.

Yards report business at the moment as very dull, with, however, a hardening tendency of prices owing to shortages. Timber, second-hand, ranges from 6d. to 7d., iron 9d. to 10d.

Electrical Goods.

Dealers report business much as it has been of late—a fairly steady trend, but nothing out of the way. Prices of material remain unchanged locally.

Latest Metal Quotations.

Standard copper, £65 10s. cash, £66 2s. 6d. three months; electrolytic copper, £73 10s. sellers' option, £74 10s. buyers' option; copper wire bars, £74 10s.; standard tin, £196 17s. 6d. cash, £196 12s. 6d. three months; foreign lead, £25 17s. 6d. prompt, £24 17s. 6d. forward; quicksilver, £10 15s.; bar silver, 32⅝d.; bar gold, 89s. per oz.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 5.—Brakpan Mines, Ltd. (s).
Leeuwpoort (African Farms) Tin Mines, Ltd. (a), 10 a.m.

June 5.—Welgedacht Exploration Co., Ltd. (a), 11 a.m.

June 6.—S.A. Townships Mining and Finance Corporation Ltd. (a), 10.30 a.m.

June 8.—West Springs (a), 11 a.m.
Daggafontein Mines (a), 11.30 a.m.
Springs Mines (a), 12 noon.
Brakpan Mines (a), 2.30 p.m.
Rand Selection Corporation (a), 3.15 p.m.
New Era Consolidated (a), 3.45 p.m.

June 9.—Transvaal Coal Corporation (a), 10.30 a.m.
Anglo American Corporation (a), 11 a.m.

June 29.—Durban Roodepoort Deep, Ltd. (s), 10 a.m.

July 19.—Transvaal Consolidated Lands (s), 12 noon.

August 10.—Transvaal Consolidated Lands (s), 12 noon.

Sept 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

"Mining in History."

Professor E. A. Watermeyer, Professor of Mining at the University of the Witwatersrand, gave an extremely interesting lecture during the week on "Mining in History." A brief summary has already appeared in the daily papers, and we hope in our next issue to print some lengthier extracts. For a community that lives in the main upon mining, the Rand takes extraordinarily little interest in the industry, and the daily papers are doing good work in drawing attention to Professor Watermeyer's interesting researches.

Why should a Business Executive bother his head about Lubrication?

A BUSINESS EXECUTIVE CANNOT BE EXPECTED TO KNOW ALL THE TECHNICAL DETAILS OF HIS PLANT OPERATIONS.

But until he gets a broad grasp of scientific lubrication, he has a very weak hold on both power losses and operating costs.

Perhaps you will be interested to check your own knowledge as follows:-

Do you know that each engine and machine in your plant is receiving the oil suited to it?

Do you know the insignificant annual cost of your lubrication compared with the cost of your equipment which this lubrication should protect?

Do you know that a large percentage of your expenses for repairs and replacements are directly chargeable to incorrect lubrication?

Do you know that preventable friction, causing power losses throughout your plant, can be controlled by Correct Lubrication?

Do you know that high quality oils always prove the cheapest oils in the long run?

Do you know that The Vacuum Oil Company has made Correct Lubrication an exact science and can introduce substantial economies in your plant without added cost?

If you would like to have before you a clear-cut survey of the lubricating problems in your plant, we propose this:

Upon request we will send one of our men to your plant. He will make a careful survey of your equipment and operating conditions. Later, after our Technical Department has studied and analysed his findings, we will forward to you a comprehensive Lubrication Audit of your entire plant.

Any recommendations we may make for more scientific lubrication will be based on our 56 years' specialisation in the manufacture and application of lubricating oils. Our service covers the world.

An enquiry to our nearest Branch Office will receive prompt response.

GARGOYLE

Lubricating Oils

A grade for each type of service

VACUUM OIL COMPANY of SOUTH AFRICA, LTD

STANDARD BANK

OF SOUTH AFRICA, LIMITED.

(With which is incorporated the African Banking Corporation, Ltd.)

Established 1862

Authorised Capital - - - -	**£10,000,000**
Subscribed Capital - - - -	**£8,916,660**
Paid-up Capital - - - - -	**£2,229,165**
Reserve Fund - - - - - -	**£2,893,335**

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The Utilitarian Value of Geological Investigation, Illustrated by the Geology of South African Coals--V

Anniversary Address by the President, C. J. Gray, A.R.S.M., read at the Annual Meeting of the Geological Society of South Africa.

That at or about the same geological time there were areas of coal vegetation beyond the hills is shown by the recent discoveries of Ecca coal near Pienaar's River, north of Pretoria, and in the Northern Zoutpansberg and Northern Waterberg. But for my present purpose I need say nothing of these coal areas except to point out that, if we neglect the possibility of relatively small land-enclosed basins, they must fringe the old land area. If we were able to map out the limits of that area, even approximately, we should be able to gather some idea where Ecca coal was to be hoped for, below the more recent Bushveld sandstones and marls. Though I think that we may neglect the idea of isolated basins for the larger coal areas, which are probably remains of still larger areas formed on the borders of a fresh water sea, we cannot neglect it for the smaller. Though some of the basin-like coal deposits may be due to removal of dolomite from below by solution, we must remember the well-known tendency of glaciation to produce a lake country, and it would be strange if the Dwyka glaciation of South Africa had not produced such lakes. Those lakes would be gradually filled during the Ecca period.

Returning to the question of the origin of the main deposits of Middle Ecca or "Coal Measure" sediments in the Transvaal and Natal, I should say that, though the evidence points to the sediment having come from the eastward, and the bulk of it may have come from that land which, according to Du Toit, in Ecca times lay to the east and south-east of Natal, it seems to me some at least must have come from the land close at hand to the north and north-west.

At the present day, sand is deposited on the Natal coast by a current from the north-east, but some of that sand has doubtless come from Africa itself.

Turning to the Cape Province we find that there is immediately obvious explanation of the absence of Ecca coals there. The Ecca series extends away to the south-east and is found in patches even beyond the limits of the Karroo. It is thick and contains a variety of sediments indicating variation in conditions of deposition generally similar to those indicated by the sediments found in Natal. Yet there are differences which may be significant. Du Toit states: "The principal sources of sediments in the stretch between Matjesfontein and Grahamstown certainly lay well to the south, as we may infer from the fact that the sandstones are invariably medium grained, white grits and conglomerates are absent. . . . At the Natal border there sets in, however, a change in facies . . . an arenaceous group makes its appearance about three-fifths up the series . . . and this when followed northwards becomes strongly developed and of great economic importance, inasmuch as it constitutes the so-called 'Coal Measures' both of Natal and of the Southern Transvaal." That quotation makes us see the Cape Ecca being formed by sediment deposited far to the north of land, while the coal seams and the coarse sandstones which are always found near them in South Africa were being deposited nearer land elsewhere. With regard to the Lower Beaufort coals we are still to a great extent in the dark. Till systematic geological survey has been carried out, more particularly in Zululand and Swaziland, we shall not know exactly which of our coals are of Beaufort age. There are thin seams in north-western Natal and in the Cape Province of that age, but at Somkele in Zululand we have thick seams. As in the Middle Ecca, the sediments in the Lower Beaufort become coarser and otherwise change in character as they are followed from the Cape to Natal. Thus Du Toit says: "The cream or drab coloured fine grained sandstones get whiter and coarser in grain and better defined, until in Northern Natal they are thick felspathic grits with little quartz pebbles and occasional intrusions of granite, greisen, quartzite, etc., practically indistinguishable from those of the Middle Ecca. Concurrently the softer strata, normally blue and green and rather of the mudstone type, became differentiated into sandstones and dark green or grey fairly well laminated shales."

I have not found any expression of opinion as to the source of the sediments forming the Lower Beaufort Beds, but it appears to me most probable that it lay to the southward and more distant from the Cape Province than from Natal. Probably after the sandstones and grits of the Middle Ecca were formed, subsidence continued till the land in the Transvaal, and perhaps also that supposed land to the eastward, sank beneath the water, and that then the shales of the Upper Ecca were deposited in that water. Then in Beaufort times the great folding and thrusting in the rocks on the southern and south-western limits of the Karroo commenced. Possibly an extension of these movements to the eastward raised existing land, or formed new land off the present south-eastern coast, temporarily and locally modifying the general subsidence. From that land came the Lower Beaufort sediments, and I picture the coal swamps of that day as fringing its northern limits. If Du Toit is correct in his surmise as to the Beaufort coals being characteristically anthracitic—though Steart reports a bituminous Beaufort seam near Volksrust—the explanation may perhaps be found partly in that northern aspect, though the changes in climate, in varieties of plants, and in temperature of water, which we may reasonably expect to have taken place in the long interval between the formation of the Middle Ecca and the Lower Beaufort seams, appear ample to account for a great difference between the coals of the two ages. There is perhaps another similar difference between Beaufort and Ecca coals. The Beaufort coal at Somkele gives a white fusible ash, which, coating the lumps of coal in the furnace, seriously interferes with combustion, especially when the draught is strong and the temperature is high. The ash differs markedly from the ash given by any Ecca coal known to me, and it would be interesting to know whether such an ash is characteristic of Beaufort coals and whether its difference from Ecca coal ash is due to the coals being formed in different land areas.

We pass on to consider the coal seams still higher in the geological scale, viz., those of the Molteno Beds in the Stormberg series. Their principal development is in the East of the Cape Province, Basutoland and Griqualand East. Coal is known almost everywhere along the line marking the southern limits of the Molteno Beds on the map, though the seams are of small thickness. Rogers, as a result of comparing the characters of the rocks with those in the Beaufort, has expressed the opinion that the "facts prove that in Stormberg times the area of deposition within our borders" (Cape Province) "was narrower than previously, and that the land was nearer the north-eastern part of the present Colanial (Cape) watershed. It is very probable that the southern mountain belt was in existence during the deposition of the Molteno Beds, and that it was connected with land which lay off the present coast of Pondoland and Natal." Du Toit considers that "the Molteno Beds will have to be regarded as an immense deltaic intercalation taking its origin in the south and spreading out northwards in a broad fan."

(To be continued.)

lourishing Natal Coal Trade—Central Mining Prosperity—
S.A. Townships' Outlook—Mining Leases—Rhodesian Prospects.

The South African
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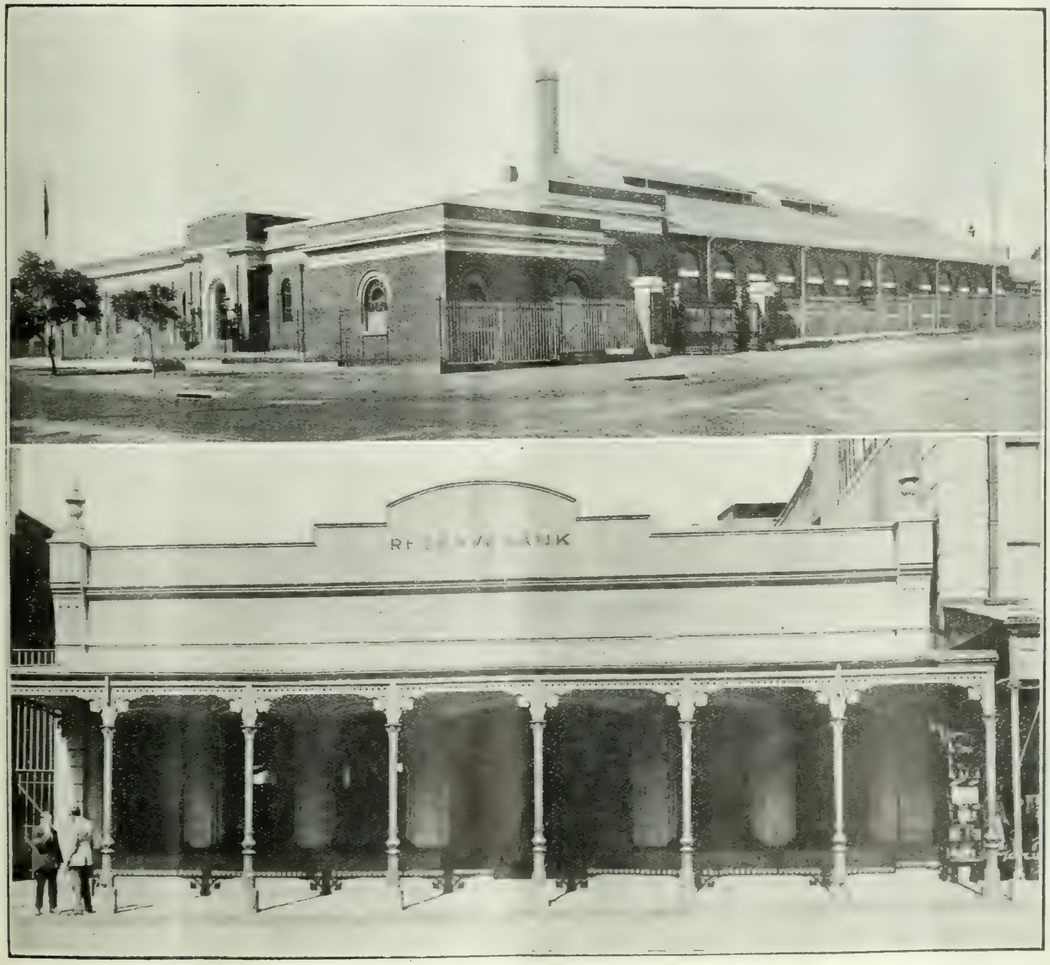
The Pretoria Branch of the Royal Mint and the S.A. Reserve Bank.



The above photographs, specially taken during the last few days for the "S.A.M. & E.J.," show two institutions now very much in the public eye. The top picture is that of the Pretoria branch of the Royal Mint, now completed, and the bottom picture reveals the modest architecture of the S.A. Reserve Bank in Church Street, Pretoria.

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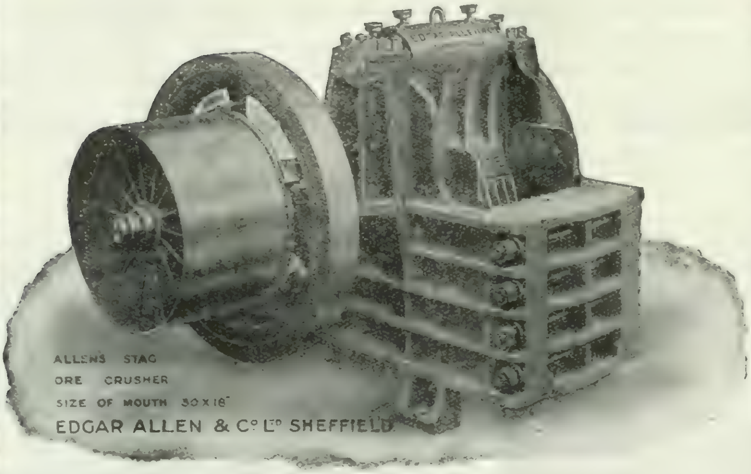

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Natal's Increasing Coal Trade.

MAY OUTPUT ABOUT 340.000 TONS—RAILWAY CARRYING CAPACITY SEVERELY TAXED—SHORTAGE OF NATIVE LABOUR—NAVIGATION GROUP'S RECORD PRODUCTION.

By our Special Commissioner.

The Natal railway system is being worked to the utmost limits of its capacity at present. The increasing demand for coal at Durban, due in the main to the cumulative effects of the coal strike last year on the Transvaal fields, which resulted in a very serious disorganisation of the oversea coal trade of that province and diverted shipping to Durban, coupled with the consequences of the French adventure in the Ruhr, have put a very considerable strain on the carrying capacity of the Natal lines, which, despite the completion of the several deviations and numerous sections of double track, is being severely taxed. During April the amount of coal transported over the Glencoe-Bluff section of the line was approximately 13,000 tons per working day, and during May this amount was increased by nearly 500 tons per diem.

As an earnest of the determined effort of the Railways and Harbours Administration to cope adequately with Natal's increasing traffic in the future it is interesting to observe the erection of the structural steel framework of the big Colenso Power Station and to note the red cable-carrying standards which have been put up around Estcourt.

It certainly looks as if the electrification scheme when completed will find that there is always a full working load on the Glencoe-Maritzburg section, which will be the first portion of the S.A.R. to change over from steam to electricity, for it is generally believed that Natal is on the eve of a big industrial boom and, what with the iron and steel industry at Newcastle, the increasing demands for coal at the Bluff, the steady growth of the rubber manufacturing industry at Howick, the spectacular advancement of the cotton industry, plus agriculture, and the already existing branches of commercial activity, there can be little doubt as the years go by more and more traffic will be hauled over the ribbons of steel which link up Natal's resources with her port.

To revert to the coal trade, it may be remarked that the output of the Natal pits in January was 269,000 tons. In February this had increased to 292,000 tons. The March production was 314,000 tons; that for April 328,000 tons; whilst the May total was in the neighbourhood of 340,000 tons.

The Ruhr adventure has undoubtedly tended to stimulate trade. Natal coal is now being despatched to Holland; a certain amount is going to Germany, and a not inconsiderable quantity is finding its way via Marseilles into the South of France. It is, in fact, considered likely that Natal coal will be entering the great French Mediterranean Port throughout the current year. In consequence of this activity in the coal trade, coupled with demands for labour in other directions, there is a marked shortage of labour for the Natal coal pits. The curtailment of recruiting operations in Portuguese territory, by the Rand Gold Mines, has resulted in increased labour-seeking activities by agents of the gold industry in areas from which Natal has hitherto drawn her labour for the collieries.

As instancing this it may be mentioned that in December, 1921, the Rand mines employed 67,894 natives from the Cape, Natal and Zululand; areas upon which the Natal collieries depend principally for their labour supplies. Owing to restricted recruiting operations in Mozambique this figure had increased to over 88,000 in December, 1922, and consequently there have been fewer "boys" to go round and the Natal coal industry has naturally suffered. Urgent representations have been made to the Government in regard to the difficulty of obtaining labour for the pits by the Natal Coal Owners' Association.

In connection with the outputs of individual collieries it is interesting to note that last month (May) the three members of the Natal Navigation Group produced over 128,000 tons between them. The Natal Navigation Company, which has its new Nos. 4 and 5 pits in partial commission, turned out 47,763 tons—a record; and Northern Natal Navigation's output of 28,772 tons was also the best output secured by this colliery to date. Hlobane's production of 32,393 tons was affected by truck and labour shortage.

NATAL COAL OUTPUT DETAILS.

The coal and labour returns for Natal Province during April, 1923, were as follows:—

Colliery.	Average Labour in Service.	Tons sold.
Durban Navigation	1,576	53,600
Dundee Coal Co.	2,602	49,388
Natal Navigation	2,150	44,950
Hlobane	1,497	35,143
Enyati	1,515	33,901
Northern Natal Navigation Collieries, Ltd.	545	30,262
S. African	843	17,005
Wallsend, Natal	762	14,850
Buffalo ..	528	13,468
Tendega	885	12,544
New Tendega	603	10,446
Natal Cambrian	377	10,183
Natal Steam	516	8,739
Utrecht	589	7,738
Newcastle	457	6,922
Ballengeich	413	5,763
Elandslaagte	285	5,581
Bernica ...	410	4,973
Tshoba	239	4,024
Dewar's Anthracite	130	1,266
Avon	58	888
Vryheid Coke Co.	53	797
Doon	26	374
Natal Ammonium	32	227
Utrecht Municipality	7	45
Total	17,098	373,077
Corresponding month, 1922	16,935	277,683

S.A. Industrial Union.

The Cape Explosive Workers' Union at Somerset West have just taken a ballot on the question of seceding from the Cape Federation of Trades and joining the South African Industrial Union. A telegram has been received at the head office of the Industrial Union stating that by 136 to 11 a resolution in favour of amalgamation with the Industrial Union was carried. The members of the iron and steel workers section of the Industrial Union, who have been inactive since the strike, have now revived the section, and 80 new enrolments have been registered in Vereeniging during the past week. Mr. A. Crawford, president of the Industrial Union, reports that similar progress is being registered in every direction, and that every month of this year has been a record in membership over every preceding month since the strike.

The Cumulative Effects of Increased Working Costs.

THE TECHNICAL ADVISER TO THE CHAMBER OF MINES RAISES SOME PRACTICAL POINTS.

The following valuable statement was submitted by Mr. T. G. A. Roberts, technical Adviser to the Chamber of Mines, to the recent Conciliation Board that sat to consider the question of increasing employees' wages:—

The effect upon a mine of increases in the cost of production is always far-reaching, progressive and cumulative, but it is not always immediately noticeable even on those mines which work on a narrow margin of profit.

All mines normally possess a certain amount of elasticity for a time in regard to the grade of ore which can be produced, and it is generally possible for a while to offset increases in cost by mining more of the richer and less of the poorer ore, but if any mine, especially one with a narrow margin of profit, is forced to continue to do this, its life as a producer becomes increasingly difficult and precarious until it is forced to close down long before such a course would otherwise have been necessary.

Point Reached Where Impossible to Develop Fast Enough.

The first effect of an increasing cost is to render unpayable quantities of the developed ore reserves available for stoping. This reduces the number of points of attack or working faces from which ore can be profitably mined, and necessitates an increase in the development footage (and expenditure thereon) required to open up other faces, and to maintain available the necessary amount of payable ore; this added dead work in turn further increases the cost of mining, and decreases the percentage of payable ore contained in the property until a point is reached where that percentage becomes such as to make it impossible to develop fast enough to provide the necessary number of payable faces, even if money were available for the purpose. The tonnage milled consequently diminishes and working costs per ton rise by reason of the smaller tonnage over which the standing charges (cost of pumping, Miners' Phthisis contribution, claim licences, etc.) can be distributed. Thus an initial increase in cost automatically gives rise to further unavoidable increases, and mines with a narrow margin of profit must succumb. The Simmer Deep is a notable example of a mine which has been killed by increases in working costs. In 1915 this mine directly employed 529 Europeans and 4,541 natives, and paid out in respect of wages and stores £578,103. It milled about 800,000 tons, and made a working profit of £44,688, or 1s. 1·944d. per ton milled, as an offset against its debenture debt of £791,500 and the interest thereon. The recovery value was 16s. 3·514d. per ton crushed, and the costs 15s. 1·690d. From data supplied in June, 1919, for the use of the Low Grade Mines Commission, it would appear that on that basis the mine had a potential life of about 20 years above a vertical depth of 7,500 feet; this estimate is based on the assumption that ore values disclosed in the last 1,000 feet of all the workings throughout the length of the property would hold, and that mining on the same scale as that referred to would be possible at that depth. Be these matters as they may, it is obvious that the Simmer Deep, with working costs at 15s. 2d. and a recovery of 16s. 4d. might have had a very considerable life, and added materially to the wealth and prosperity of this country, not only by its direct and indirect contribution to the revenue of the State, estimated by Mr. [illegible] in his evidence before the Low Grade Mines Commission, at £80,000 per annum, and its expenditure in respect of wages and stores, but also in the very important matter of maintaining the credit of Rand mining ventures with the investing public in regard to the redemption of debentures and loans.

Illustration of Simmer Deep.

The following figures relative to the Simmer Deep will serve to illustrate the point already made in regard to the effect of increased costs:—

Year	Cost per ton	Recovery per ton, normal price of gold	Increase in cost above 1915	Tons milled
1915	15s. 2d	16s. 4d	—	769,100
1916	16s. 2d	17s. 11d	1s. 3d	762,700
1917	18s. 0d	18s. 11d	2s. 10d	621,800
1918	21s. 2d	20s. 1d	6s. 0d	516,700
1919	23s. 2d	21s. 2d	8s. 0d	508,900
1920	24s. 3d	19s. 2d*	9s. 1d	271,100

* If the premium on gold is included this figure becomes 23s. 2d.

These figures clearly indicate the process which has been described. As the cost per ton increased, more and more of the richer ore was mined in the hope of tiding over the period of high costs. The tonnage crushed, however, steadily declined, and the mine finally closed down at the end of August, 1920, as a direct result of increases in costs. It is, of course, not maintained that all of the increases were of the automatic nature previously referred to; in this case that process was speeded up by the continued increase in the cost of labour and stores arising as a result of the war and the unthinking attitude of the European workmen in regard to their working efficiency and strikes.

Some reference has already been made to the possibility of a mine reaching the point where through increases in cost the percentage of payable ore contained in the property becomes so reduced as to make it impossible to do the necessary development work, i.e., impossible to sink and drive fast enough to maintain an output sufficiently large to carry the cost of operation and standing charges. In a mine with a narrow margin of profit this point is easily reached. On the Simmer Deep, for instance, an examination of the values contained in the last 1,000 feet of development throughout the length of the property shows that 35 per cent. of the total reef tonnage was either payable or contained sufficient gold to enable it to be worked without loss on the 1915 scale of operations with costs at 15s. 2d. per ton; an increase in cost of 4s. per ton, however, reduces the percentage of payability to 26 per cent., while a further 2s. brings it down to 12 per cent., a perfectly hopeless proposition in a property where the gold is not in well defined shoots.

To find 800,000 tons of "payable" ore per annum on this basis there would require to be done on an average not less than about 1,500 feet of incline shaft sinking, station cutting and cross-cutting in each shaft, and certainly not less, but probably more, than 30,000 feet of other development work per annum; an obviously impracticable task on a mine like the Simmer Deep with a mill at work. As a matter of fact, the largest amount of development work which this mine has done in any twelve consecutive months since the end of 1913 is 11,713 feet, or only a little over one-third of the amount required in the altered conditions due to increases in cost.

Easily Plunged Into Hopeless Position.

It will be clear from the foregoing that a mine containing vast quantities of normally payable ore can be plunged into a hopeless position by a relatively small increase in cost bringing about a reduction in the percentage of the payable ore contents in the property. In the case of the Simmer Deep, it is evident that a point was reached where a very small increase indeed completely changed the whole aspect of the mine, and made it impossible for it to continue with any hope of success.

Apart from details, these remarks apply on broad lines and in varying degree to most mines, and more especially to those with a narrow margin of profit.

New Retorts for Recovery of Oil from Shale.

A BRIEF REVIEW OF THE DIFFERENT TYPES OF RETORTS ON THE MARKET.

The following extract is from a paper by Dr. V. [illegible], the head of the Colorado School of Mines.

The new types of retorts projected in England are the L. M. N., or Neilsen, process, the Plauson, Turner, Lamplough Harper, Fusion, White, Freeman, [illegible], and the Hampton Ryan digestion process. In the Hampton Ryan process a distinguishing feature is the keeping of the temperature below 360°F., and producing vapours rather than permanent gases. Gasoline and kerosene are said to be derived, condensed and refined in virtually one operation. The Plauson is a colloidal process invented by an Esthonian and developed in Hanover, Germany. A retort is now being erected in Esthonia by a French company. T. G. [illegible] has invented a low temperature retort of the vertical type fitted with stirrers, and divided into horizontal sections in which the powdered shale is pre-heated until it is just ready to give off vapours. It is then mixed with hot sand and the temperature of the shale raised to the point needed for complete carbonisation under low temperature conditions while the sand is a little hotter and there is still sufficient heat present to distil the volatiles. Experimental work has been done in South Africa. The Turner retort represents the vertical, internal-heated retort with the use of steam. It has been under test on a commercial scale on the property of English Oilfields, Ltd., in Norfolk. In the Freeman multiple retort the striking feature is heat control. The British Oil and Fuel Conservation, Ltd., of London, has equipped a testing laboratory at Willesden, has installed a Freeman multiple low temperature retort, and is prepared to make 10 ton tests on oil-shale and similar carbonaceous material. For this retort the shale is reduced to pass a very fine mesh. Throughout the entire treatment the heat is carefully controlled by a precision temperature system, so that excessive heating is avoided and a scientific and economic treatment of the shale results. The Lamplough-Harper retort is of the vertical type, and is noteworthy because of the claims made by the inventors, that is, a low temperature of unsaturates, no gas, and a clean crude oil. The shale is treated by indirect heat. A formal test was made, October 17, at Feltham, near London. A yield of 49·4 gallons to the ton was obtained on oil-shale from the Transvaal. A small test-plant is to be erected in South Africa.

Dr. Carter White has devised a horizontal revolving retort, which has been erected at Vikhroli, near Bombay, and which, the inventor claims, has new and important features. The following is a published description: "The heated gas is circulated through the retort a number of times before extraction, and water for condensers is practically dispensed with. The gas, upon leaving the retort, is passed through a mechanical extractor, which precipitates the heavy oil, and is then circulated by means of a blower or fan again through the retort, being re-heated on its way to a furnace, and so on until the gas is saturated with oil, which can be accomplished without extensive cracking taking place. It is then cooled to a temperature of about 70°F. and compressed in a two-stage compressor, the rich gas readily giving up its oil and afterwards being re-heated and circulated through the retort again until sufficiently enriched to be compressed."

The Fusion retort is of the revolving horizontal, externally-heated type, fitted with a revolving breaker which breaks the shale while in transit. An experimental plant has been erected at Middlewich to work in three ways: (a) to treat shale in lots up to half a pound; (b) in lots up to five pounds; and (c) a five ton unit. The [illegible] charge are continuous and automatic. Considerable experimental work has been done on [illegible] shales. The following are typical:

	Esthonian Shale	[illegible] Torbanite	Australian Torbanite	Kimmeridge Shale
Yield of oil in gallons	[illegible]	[illegible]	131·7	[illegible]
Gravity	0·921	[illegible]	0·854	[illegible]

Should Stockbrokers Advertise?

THE U.S.A. EXAMPLE.

The general question of Stock Exchange advertising as regards the land and London has recently been much discussed. In this connection some interesting and practical comments are contributed to the *Financial Times* by Mr. Herbert A. [illegible], a member of a well-known firm of American brokers, now in England on a visit.

In regard to advertising, Mr. [illegible] asks: "Why not?" "What's the objection?" He adds: "Why is what is good for business in the States and other countries bad for business of Stock Exchange members here? Take the financial papers of New York, *The Wall Street Journal*, *The New York News Bureau*, *The Financial Chronicle*, and the columns of the leading daily papers. What is more interesting, important, and valuable to anyone interested in securities than the mass of advertising therein shown? Point out to me one objectionable advertisement or any advertisement of a doubtful character which does not stamp itself as outside the pale [illegible] in the recognised papers which refuse all doubtful advertising.

"Here again the New York Stock Exchange's 'Business Conduct Committee' controls. A member may not advertise in an undignified, flamboyant manner. A member well knows what that means, and in all my years of experience I have never seen anything to cavil at, and, of course, I have done some advertising and circulating myself for member houses.

Advertising Would Develop Business.

"If members here were allowed to carry securities on proper margins and advertise, the patent obvious results would be, speaking from my experience and human nature and its actions are much the same in all civilised countries:—

(1) A large transfer of business from the banks into brokers' hands, thus retaining the full commission.

(2) A tremendous development of new business by the creation of new facilities, developing inquiries, and trading on the part of the public as well as between houses.

(3) The earning of interest profits by houses on financed securities carried for customers, where now the banks make that profit.

(4) The [illegible] of a wide 'quotation' market in vast numbers of securities through publicity and lack of interest due largely to lack of knowledge on the public, and this latter due to prohibition of advertising and circularising in a manner to reach, as to the facts, the public, as well as a member's own clients.

"Remove these [illegible] regulations and I, as an experienced man who knows what I talk about, can confidently predict for the members of your Exchange a volume of business where every member will have a chance and where the development of interest in securities will grow as I have watched it proceed, and have done my part to help it proceed, in the New York market."

The Francois Cementation Process.

Reference has been made from time to time in this Journal to the process known as "Cementation," which, by its application to mining and allied engineering works, has removed many difficulties and obstacles and made progress and development possible under otherwise insuperable conditions—not only in the practical technical results which it effects, but in the economy of working costs which it ensures. We are now able to give fuller information on this, a subject obviously of great importance to the industries, to which the process of cementation can so advantageously be applied.

Although, generally speaking, Cementation is not the monopoly of any one firm, it is none the less true that in so far as its use in South Africa is concerned cementation has been carried out exclusively by the Francois Patent Process, to which all the results achieved in this country must be attributed.

It is the intention of this article, therefore, to deal particularly with the Francois Process of Cementation, as modern cementation is so bound up and associated with the Francois Process that cementation, as distinct from grouting, has little significance except when employed as the Francois Process.

Grouting might be described as the filling of open or easily accessible cavities with liquid mortar by hand pouring, gravity filling, compressed air, or hand pumping; but the Francois Cementation Process includes, in addition to this, the injection of the smallest and most remote fissures and the very pores of the rock itself with liquid cement by steam pumps after, when necessary, preliminary silicatisation.

Development of the Process.

It would now be impossible to say when and where grouting was first used in mining. Probably the first fully authenticated case was in the injection of the shaft lining at the Rheinpreussen shaft in 1864 where the, for that time, high pressure of 210 lbs. to the square inch was used. A considerable feeder of water behind an old wooden shaft lining was successfully injected at Courrières in 1900. Injections of liquid cement were actually employed during a shaft sinking in Germany by R. A. Weide at Pohlhauer, Saxe, in 1901. Early examples of its use in France were by M. Romaux at Lens and by Mr. Deffieux at the Mine de Males in 1908. The methods employed suffered from many disadvantages and cementation did not become recognised in mining until M. A. Francois, in 1906, proved that it was possible to inject from the inside of a shaft below permanent water level. In 1911 M. Francois introduced his partly developed process into England, where its possibilities were at once recognised by colliery engineers and where he was given every opportunity to improve his patents and develop his process. It was in England that the necessity for using silicatisation as an accessory became evident.

The finally developed process of cementation, silicatisation and ferro-concrete walling was first employed by Mr. H. N. Berry at the sinkings of Hatfield Main Colliery, Yorkshire, and its successful development was markedly helped by the confidence and assistance of the Hatfield Main Colliery management. Over the previous crude methods this system was as distinctive and advanced as its success was marked, and its development proved an invaluable aid to the development of coal mines in wet areas.

Introduction to South Africa.

Early in 1917, with the initiative and enterprise that have been marked features of its progressive development, the process was introduced into South Africa. Much interest in it had already been aroused in this country, and it was received with an enthusiasm fostered by the expectancy and hope of its solving the serious water problems associated with mining operations. This interest and sanguineness were well maintained, and the importance and practicability of the process were established as successively it dealt with and overcame water troubles at the Hercules mine, Comet Deep, Angelo Deep, and in the mine properties of the East Rand Proprietary Mines, Ltd., the Geduld Proprietary Mines, Ltd., and Daggafontein Mines, Ltd. (to give only a few instances), and continued successfully with mine after mine, and with equally successful application to civil engineering works; in the cases of mines, closing off considerable quantities of water, and, with regard to the civil engineering works, effectively sealing and consolidating foundations.

The success of the process, together with the wide and confident acceptance of its possibilities, warranted the formation in South Africa of a Cementation Syndicate, which however was later superseded by a direct branch of the present English company, which had acquired the world's rights and patents, and whose activities in this country are under the direction of Dr. G. A. Voskule, of Meischke's Buildings, Harrison Street, Johannesburg.

The perfected process was also introduced into France, Belgium, Spain and Germany, and it is now recognised as being the cheapest and most effective known method of dealing with difficulties caused by the presence of water or bad ground in any engineering or building works. Its efficiency in connection with colliery engineering is shown by the fact that, of major operations, 40 shafts have been successfullw sunk by the Francois Process, thereby obviating excessive and prohibitive costs; while of relatively minor operations, though essentially of considerable importance to working collieries, the process has been economically applied in a great many cases, too numerous to detail, to such work as the sealing-off of leakages through cast iron and concrete tubbing, and brickwork and masonary lining, the solidifying of strata and shaft sidings, the securing of shaft eyes, the recovery and building up of collapsed shafts, the prevention of slips, the closing off of faults, the building of underground dams, the quenching of gob fires, and to much other varied and incidental work, which, although of a minor nature, has proved of great value in eliminating burdensome pumping costs and often preventing destructive losses.

In 1919, the various patents, processes, contracts, and works of Monsieur Francois were purchased by a mining financial group in London, and the Francois Cementation Company, Ltd., with a capital of £750,000, registered on December 17th, 1919, was formed to carry on and develop the business of M. Francois. The services of M. Francois were retained, at first as managing director, and afterwards as director and consulting engineer.

Use in Shaft Sinking.

The process which has enabled shafts to be sunk in many varying classes of ground, and through every kind of water-bearing strata, is in itself simple, but its successful application requires a wide range of experience, as no uniform rules or routine can be laid down. While specific cases, therefore, differ very widely, the following general description of the sinking of a shaft may be of interest:—

The shaft is sunk by ordinary methods until the presence of water is indicated by means of test holes. A number of holes are then bored in the shaft bottom, pipes being cemented in them, their number, position, and inclination, being dependent upon the size of the shaft and the character of the strata. Through these pipes boreholes are sunk by a diamond drill. On the tapping of feeders by one of the holes the boring is immediately stopped and the pipe in the hole connected by a length of high pressure flexible hose to a column of pipes in the shaft, leading in turn to a cement pump and mixing tank on the surface. The holes are arranged in series for cementation and silicatisation, and into them cement pulp and mixtures of chemicals are pumped, the strength and proportion of the mixtures of the chemicals, the percentage of cement, and the pressure employed being such as experience has shown to be best suited to the class of strata and pressure of water to be treated. The holes are cleaned out and re-injected or further deepened as necessary, the process being repeated with the various holes, boring and injecting at the different holes taking place simultaneously. The ground is treated in this manner until the desired length of ground has been rendered sufficiently watertight to allow sinking and walling operations to proceed. The ground is excavated in the ordinary manner and reinforced concrete walling built up, any water not sealed off by the cementation of the boreholes being shut off by injections between the completed lining and the ground. On the walling being completed a second length of ground is excavated and walled, this procedure being continued till the water-bearing strata has been passed through. The lining employed through water-bearing or bad ground is ferro-concrete tubbing of monolithic construction, which has many advantages over cast iron tubbing as shaft lining. In addition to being considerably cheaper for anything but shallow depths, it has many other advantages; for instance, it does not corrode; it does not require wedging, repairing or renewing; it increases strength with age; it is easily adaptable to change of size while sinking; it is not appreciably affected by temperature variations; and with great inertia it has great flexibility.

Civil Engineering Uses.

Although the process was originally developed to deal with water difficulties in mining operations, to which work, of course, it is more closely associated, it has also been, and is, largely applied with equal success to civil engineering works, such as the consolidation of foundations for surface dams and heavy buildings, where the ground would otherwise be prohibitive; to the drying off of tunnels where water is entering through the roof, or to strengthening the roof if the tunnel has to be excavated through bad ground; and the sealing of leakages of reservoirs, etc. Of such work we might instance the consolidation of the foundations for a railway bridge at Blagny in France, where the river gravel was cemented to such effect that the bridge piers were enabled to be built directly thereon rendering excavation to solid rock unnecessary; and the nearer cases of the effective and economical preparation of the foundations for the Mazoe Dam, and the recently completed foundations of the Grain Elevators at Capetown.

Although this description of the Francois Cementation Process has been necessarily restricted, and many instances of work performed and results attained have been omitted owing to lack of space, the practical advantages of the process are plainly manifest, and it is apparent that cementation, as a means of assisting the further exploitation of mineral wealth, of overcoming obstacles in the way of development, of facilitating constructional work, and of securing and strengthening existing structures, is a factor of great potential value, and must be considered one of the most useful accessories to the mining industry, and to the engineering world in general.

In connection with the plans mentioned some time ago for the enlargement of the output of the Sena Sugar Estates on the Zambesi, the material for the new factory below Mopeia and for the light railway between Vila Fontes and Caia station, on the Trans-Zambesi line, some 11,000 tons in all, is beginning to arrive at Beira from Europe. When the new factory is completed the estates will have four mills going, capable of bringing the yearly output of sugar up to 50,000 tons.

Imperial Mineral Resources Bureau.

In the course of their fourth annual report the Governors of the Imperial Mining Resources Bureau state that the procuring of early and accurate official information in respect of the mining and metallurgical industries of all parts of the world is an object of paramount importance, conducing, perhaps more than anything else, to the formation of an efficient intelligence service in relation to these industries. With this object in view, the Bureau are making every effort to secure the early delivery of the official publications relative to statistics of production, consumption, imports and exports of minerals and metals. In this respect, as regards foreign countries, they are now receiving early delivery of nearly all the official publications relative to minerals and metals through the Department of Overseas Trade, and the Foreign Office has also been very helpful. In many cases the Bureau has established direct communication with the foreign Mining, Geological, Commercial, Customs and Labour Departments.

A large number of inquiries have been dealt with by the Bureau during the past year relating to various aspects of the metal and mineral industries. Since the last Report the compilation of the "Mineral Conspectus of the British Empire and Foreign Countries" for the period 1913-19 has been nearly completed.

The statistical series dealing with the years 1919-21, in which detailed figures are given as to production, imports, exports and prices, is in an advanced state of preparation. This series is on the lines of the Statistical Summary, 1913-19, but will contain much more detailed trade statistics. Regarding this series, it was decided that values should be recorded in three separate ways, viz., in terms of (1) the currency of the country of origin; (2) British currency calculated at the average rate of exchange between the country of origin and the United Kingdom; and (3) the gold value.

The British Empire Exhibition authorities requested the Bureau to undertake the organisation of an exhibit illustrative of the mineral resources of the Empire, and the Governors set up a Committee which drew up a scheme for such an exhibit. As, however, funds were not forthcoming from Exhibition sources, the Bureau had to abandon the comprehensive scheme which they had elaborated for the illustration of the whole mineral wealth of the Empire. The Bureau is represented on the Mining and Metallurgical Committee of the Exhibition (its chairman being the Chairman of the Committee) which is organising an exhibit representative of the mining and metallurgical interests of the United Kingdom.

The Bureau has continued its efforts to secure a system of unified mineral and metallurgical statistics, and has issued skeleton forms of returns in respect of:—(1) Tin; (2) tungsten; (3) copper; (4) lead; (5) zinc; (6) nickel; (7) cobalt; (8) coal, coke and by-products; (9) aluminium and bauxite; (10) iron and steel. These have been circulated to the Governments of the United Kingdom, India, the Dominions, Crown Colonies and Protectorates. The desired criticisms and comments have been received from most of those Government Departments and others to whom the forms were sent, and the Bureau are only awaiting replies from the remainder before proceeding to draw up and issue revised forms.

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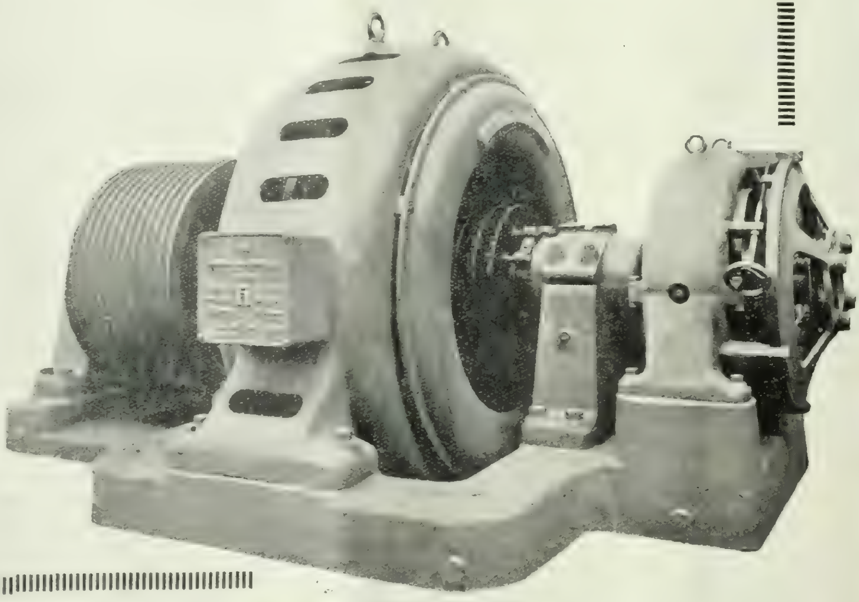

Government Mining Lease Inspector's Report.

POINTS FROM THE QUARTERLY REVIEW BY MR. TWIDDY OF FAR EAST RAND MINES.

From the quarterly reports by Mr. J. H. Twiddy on the mines in which the Government is interested we take the following:—

West Springs.

Of the total footage developed 130 feet were accomplished from the Springs Mines property, but no payable reef was exposed. Compared with the previous quarter the total development shows an increase of 211 feet. The payable percentage of the footage sampled decreased from 45·6 per cent. to 37·9 per cent., but the average value increased from 162 inch-dwt. to 672 inch-dwt.

New State Areas.

The erection of the reduction plant made good progress during the quarter, and it is anticipated that the work will be sufficiently advanced to commence crushing early in May. Of course, at first operations will be somewhat limited until the plant is finally completed. The cutting of the fan chamber and return airways underground made considerable advancement, and it is hoped to have the fan erected and running during May.

Modder East.

The average value and width of ore mined from the payable reserves, according to data adopted in the estimation of reserves as at the 30th June, 1922, was 8·78 dwt. over 57·58 inches, whilst the payable reserves as a whole at that date averaged 7·07 dwt. over 57·6 inches. Overmining has therefore taken place to the extent of 99 inch-dwt., or, approximately, 1·7 dwt. over the stoping width. The face sampling value of the ore stoped fell below the estimated average value of the corresponding blocks, the difference being 39 inch-dwt. Falls of hanging temporarily stopped stoping operations in some of the higher grade stopes. Of the total tonnage mined from stopes about 25 per cent. came from the No. 2 shaft section of the mine. The average stoping width shows a decrease of two inches compared with the previous quarter.

Brakpan.

Compared with the previous quarter, there has been an increase of 5,618 tons in the total rock broken, and a decrease of 0·39 dwt. in the average value. The value and width of the ore mined in the payable reserves, according to data adopted in the estimation of reserves as at the 31st December, 1922, were 9·04 dwt. over 68·79 inches, whilst the payable ore reserves as a whole at that date averaged 8·23 dwt. over 70 inches. Overmining has, therefore, taken place to the extent of about 2-3rds dwt. The face sampling value of the ore mined from the payable reserves was slightly less than the corresponding estimated block value.

Springs Mines.

Compared with the previous quarter, there has been an increase of 6,521 tons in the rock broken. The average value and width of ore mined from the payable reserves according to data adopted in the estimation of reserves as at the 31st December, 1922, were 9·12 dwt. over 59·20 inches, whilst the payable reserves as a whole at that date averaged 8·79 dwt. over 59·81 inches. The face sampling value of the ore mined from the payable reserves, allowing for the smaller width mined, was slightly higher than the estimated value of the corresponding blocks. Compared with the previous quarter, the tonnage milled shows an increase of 7,600 tons, and the gold obtained an increase of 2,962 ounces.

Government Areas.

Compared with the previous estimate as at the 31st December, 1921, the reserves show an increase of 91,798 tons, the average value having increased by 10 inch-dwt. The average stope width is one inch less, and the average stope value ·03 dwt. more. The distribution of the reserves over the four shaft sections is much the same as for the previous year. Taking the average working cost for the December quarter of 1922 and gold at par, the ore reserve limit of 4 dwt. used in the calculation of the ore reserves meets these costs, therefore the whole of the reserve tonnage may be accepted as payable irrespective of any gold premium. The average value and width of the ore mined in the payable ore reserves, according to data adopted in the estimation of reserves as at the 31st December, 1922, were 8·73 dwt. over 79 inches, whilst the payable reserves as a whole averaged 8·78 dwt. over 75·6 inches. The face sampling value of the ore mined during the quarter from the payable ore reserves was 14 inch-dwt. lower than the corresponding estimated block value. Compared with the previous quarter, there has been an increase of 7,500 tons in the tonnage milled, but a decrease of 6,150 ounces in the gold obtained, this decrease being due mainly to an exceptionally high percentage of extraction for the previous quarter.

The Threatened Shortage of Base Metals.

In the steady exhaustion of the base metals thoughtful people are beginning to see a serious threat to modern civilisation. This position was brought out by Sir Richard Redmayne, Chairman-Governor of the Imperial Mineral Resources Bureau, in a lecture delivered before the Royal Society of Arts. With the exception of tin, of which the Empire production is about half the total world output, the United Kingdom consumes much larger quantities of the principally used base metals than the Empire produces. In 1921 the Empire production of copper was only 8 per cent. of the world's output. In the cases of zinc, lead and bauxite (the ore from which aluminium is obtained) the percentages produced by the mines of the Empire were 30, 24 and 9 respectively. These figures were above those of 1913. An interesting point made by Sir Thomas Holland, Rector of the Imperial College of Science and Technology, in the course of the discussion was the fact that such metals as zirconium and vanadium, which are popularly regarded as among the rarer kinds, are to be found in the earth's crust in much larger quantities than copper, while in the case of nickel also there is nine times as much as there is copper. It is well known that while many of these metals are of very widespread occurrence, it is only in a few limited areas that the ores are sufficiently concentrated to be commercially workable in the present state of mining and metallurgical science. In fact, the workable deposits may include less than a millionth of the total quantity of metal contained in the accessible portions of the world's crust. In the case of copper, lead and zinc, Sir Thomas Holland pointed out that the average percentage in the rocks must be increased locally by natural causes by 2,000 or 3,000 times to render a deposit workable by modern methods. Thus every advance in metallurgy which enables lower grade ores to be treated profitably multiplies rather than adds to the world's available resources, and thereby increases the potential span of civilisation by giving it an extended lease of life. On the other hand the action of labour in forcing up working costs produces an exactly opposite effect. Sir Thomas Holland remarked that a single session of a Trade Union Congress could undo the work of a lifetime of metallurgical research, and shorten the expectation of life of civilisation by many generations.

Miners' Phthisis.

INCIDENCE OF SILICOSIS.

The second of this year's series of popular science public lectures arranged by the Pretoria Branch of the S.A. Biological Society was delivered in the Town Hall, Pretoria, last Friday night by Dr. W. Watkins-Pitchford, Director of the S.A. Institute for Medical Research, who chose "Miners' Phthisis" as his subject.

Having discussed the various names by which the disease is known, the lecturer pointed out that it was produced by inhaling particles of mineral silica, silica in the uncombined form, as in flint or quartz, was alone capable of producing the disease. Microscopic traces of silica are commonly found in the lungs of people who live in parts of the country where quartzite rocks abound; whether or not the disease developed so as to be recognisable during life depended solely upon the number of particles of silica which had entered the lung. Cases of the typical disease are occasionally found in people who have not followed any occupation known to produce it—a railway steward on the Rhodesian mail train, a farmer, a transport rider, and a brickmaker were instanced; in all such instances, however, the inhaling of excessive quantities of siliceous dust was the cause. The lecturer was strongly of the opinion that employment in the quarrying and crushing of quartzite for railway ballast called for close supervision by the Public Health Department. He then went on to refer to the prevalence of pulmonary tuberculosis in various industries in England and Wales, and pointed out the important, and usually unrecognised, part which silica dust plays in producing the disease in these industries.

Silicosis.

All the essential changes in the lung in silicosis occur in its connective tissue. This tissue was described, and the process of swallowing the dust by the cells of the air vesicles was detailed. When these cells have swallowed the dust they migrate into the connective tissue of the lung and if the dust is silica they change into fibrous tissue in that situation. The various changes which the formation of this fibrous tissue occasions were described, and the appearances to which they give rise in an X-ray photograph were shown. It was specially interesting to note that, since the particles of silica are carried into the lung tissue in the bodies of cells, the particles must all be small enough for these cells to swallow.

The relations between silicosis and tuberculosis were then discussed at some length, and the changes produced when the tubercle bacillus develops in the simply silicotic lung were fully illustrated. A condition which the lecturer termed "latent" silicosis was described, and the special danger which tuberculosis infection has for such cases was drawn attention to. In the Transvaal the only sources of infection by tuberculosis which the miner need fear are human beings who are consumptive. Tuberculous meat and milk are negligible sources of infection with us; last year, only 1 in 10,000 carcases of cattle was found infected with tuberculosis in the Johannesburg Abattoirs. An outline of the various ways in which a miner should protect himself against tuberculous infection, and strengthen his resistance if he already have the infection, was given; special stress was laid upon the value of daily recreation in the open air, and the daily consumption of genuine butter and an orange or other such articles owing to their special utility to the particular vitamins they contain. Charts of the incidence of simple silicosis, Tuberculosis-with-silicosis, and simple tuberculosis upon both the miners and the natives, were exhibited and discussed. In all instances the charts showed the steady decline of these diseases most noticeably, perhaps, with respect to tuberculosis with silicosis amongst the miners, and simple tuberculosis amongst the natives.

Drills and Jackhammers.

The special risks associated with the use of machine drills and jackhammers were alluded to. The lecturer remarked that, marvellous as was the ingenious construction and workmanship shown in these appliances, it was still more marvellous that so little genius had been devoted to making them safe to use.

It had been stated, and the statement was obviously admissible, that if the silicosis of the gold miner would be completely abolished from South Africa by compulsorily closing the mines, such a course would be not only justifiable but imperative if the production of silicosis were an inevitable accompaniment of mining. The causes of the disease are, however, known, and can be avoided with the same prospect of success as accidents on the railways are avoided. The avoidance of silicosis is aimed at by permitting the initial employment only of those who are physically fit, and by preventing the workers from inhaling dangerous quantities of siliceous dust.

Between August 1916 and the 1st of last month, 5,234 recruits have become miners after passing the initial examination of the Bureau. None of these has developed silicosis up to the last-mentioned date; this, however, does not justify the conclusion that the mines are not now producing the disease.

No practicable respirator has yet been devised which will restrain the dangerous dust without proving a serious embarrassment to respiration. The formation of dust during drilling or shovelling rock, or ore, is prevented by the efficient use of water. The dangerous nature of siliceous mud, as soon as it has become dry, is not sufficiently appreciated. The pre-eminent importance of removing dust-containing air by means of ventilation is fully recognised. The amount of dust in the air of the mines is a matter which is under constant observation; about 34,000 samples of air are now being examined annually. Although the employers are morally and legally responsible for protecting the workers from dust, it is the miners themselves who are vitally concerned in preventing the disease. Its complete abolition is contingent upon their fully appreciating this latter fact.

The lecture was well illustrated by numerous lantern slides.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 9.—Transvaal Coal Corporation (a), 10.30 a.m.
Anglo American Corporation (a), 11 a.m.
June 29.—Durban Roodepoort Deep, Ltd. (s), 10 a.m.
July 19.—Transvaal Consolidated Lands (s), 12 noon.
August 10.—Transvaal Consolidated Lands (s), 12 noon.
Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

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S.A. Townships, Mining and Finance Corporation.

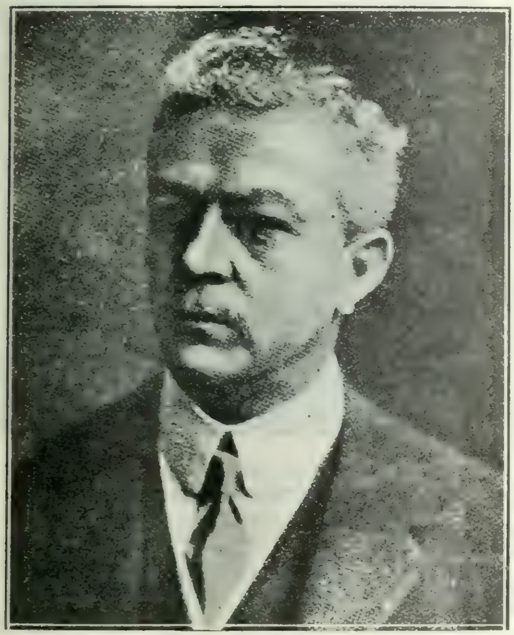
SIR JULIUS JEPPE'S REVIEW OF THE MULTIFARIUS ACTIVITIES OF THE COMPANY—GOLD. DIAMONDS. COAL AND REAL ESTATE INTERESTS.

The 23rd annual general meeting of the South African Townships, Mining and Finance Corporation, Limited, was held in the board-room, Clewer Buildings, Simmonds Street, Johannesburg. Sir Julius Jeppe, chairman of the Corporation, presided.

In reviewing the operations of the Corporation for the year under notice, and in moving the adoption of the annual report, the chairman said, *inter alia*:—

Effect of the Strike.

I don't think that any of us have as yet forgotten the terrible time we went through in the first quarter of last year, which affected every industry and every business not alone in Johannesburg, but throughout the Union. The consequences of that upheaval were felt throughout the year, and even yet we have not fully recovered from them. Under these circumstances, you must admit that the profit of £60,546 14s. 7d. made during the year can be considered more than satisfactory, athough it fell far short of the previous year. The shrinkage in our business naturally demanded increased watchfulness in expenditure, and I am glad to point out that we were able to effect a saving in working expenses of over £9,000. Items on the debit side of the balance sheet have been explained in the directors' report, which records the fact that we have made ample provision for any possible depreciation in values by debiting the reserve account with an amount of £55,160 19s. 6d. The appropriation account, on the other hand, has been increased by £60,546 14s. 7d., the year's profit already alluded to, and now stands at £206,958 2s.



Sir Abe Bailey, Bart.

You were, no doubt, disappointed at the passing of the dividend. The reasons which induced your directors to take such a step were published on December 30 last. After very careful consideration of the pros and cons, we came to the conclusion that it would not be in the interests of the shareholders to deplete our cash resources whilst we were obliged to contract liabilities in the improvement of promising assets and the protection of others. In addition to the 53,115 ex-enemy shares in your company, which we purchased from the Custodian at a cost of £19,700, we also secured at attractive prices from the same source £22,210 worth of ex-enemy shares in companies in which you are already greatly interested. We acquired an option over 40,000 shares in the West End Diamond Company, and we made ourselves liable for, roughly speaking, £20,000, a considerable portion of which has already been spent in the development of your Mamre property. The irrigation scheme on your Crocodile and Elands River estate also called for additional expenditure. I have no hesitation in saying that all these transactions will prove of considerable benefit to the shareholders.

Corporation's Assets.

I will now deal shortly with your principal assets. Only small alteration has taken place in your farm holding. At the close of the year under review you held 102 farms in freehold and mineral rights with a total area of 819,609·6 acres; including the mineral rights of 114 additional farms, with an area of 880,760·8 acres, all within the Union of South Africa. In addition to this, in Northern Rhodesia you held 486,710·047 acres, and in Southern Rhodesia 21,741·659 acres. You hold the mineral rights over 409,087·464 acres of the land in Northern Rhodesia. The total amount at which all your farm properties stand in your books is £328,043 14s. 11d. The mineral rights of the 114 farms already mentioned are represented in your books by £114, which is £1 per farm. Considering that a large number of these farms are known to be in mineralised zones, the book value of the mineral rights are naurally merely nominal.

Tweerivier.

The irrigation scheme, to which I have already alluded, falls within this district. It comprises a big block of farms with a total area of nearly 10,000 acres. The Crocodile River runs right through the centre of these farms and is joined by the Elands River in the middle of the block.

Mining Ventures and Mineral Rights.

The amount of £15,926 4s. 8d. invested in mining ventures and mineral rights, as already stated, consists chiefly of money expended on the development of Mamre (to which I will allude later on); in addition to that we have 15 per cent. in the farm Leeuwpoort No. 1, Boksburg, which returns a very handsome income, and also a tin prospecting venture, the further development of which is now under consideration. The amount of £777,272 1s. 5d. represents money owing to the company on account of the purchase of farms, stands, houses, etc., as well as dividends receivable; the latter have since been paid and the former is adequately secured and returning a fair rate of interest. With regard to the £621,130 8s. 9d., representing your share investments, as usual the list of shares held by your company is laid on the table. Where these shares figure in your books above the market price they were written down to their market value as at December 31, 1922; no account has, however, been taken of any appreciation in the value of your other share holdings which stood in your books at below market prices. Had we put all these shares down at market value as on December 31 they would have shown a substantial increase over the figure at which they stand in your books.

I will now deal shortly with companies under your control and in each of which you hold large interests.

Mamre.

We own 75 per cent. of the mineral rights on this farm, and we have arrived at an agreement with the owners of the remaining portion and the discoverers' claims giving us the entire control of mining operations there.

West End Diamonds.

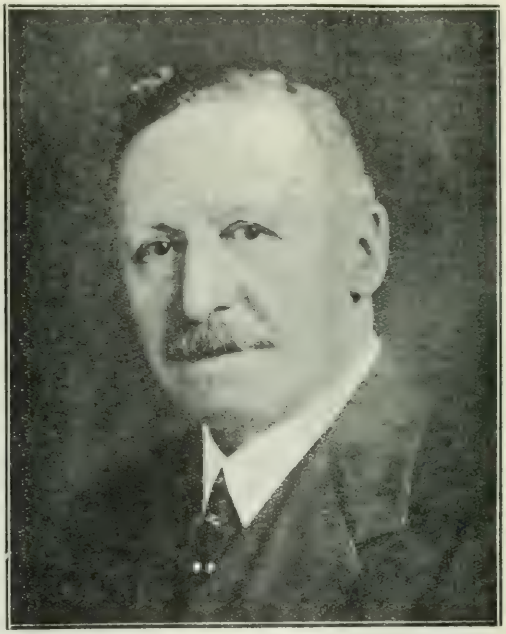
In February this year your directors proposed to the directors of the West End Diamond Company a scheme for reconstruction, providing that company with sufficient funds for a necessary extension of plant, etc. This proposal was accepted, and resulted in a considerable increase in your shareholding of the West End Company. It will be of great interest to you to know the latest position of that concern, and I will therefore read the following report, obtained from our consulting engineer:—"The total number of loads washed from April 1, 1922, to April 30, 1923, was 265,[illegible], of which [illegible] consisted of yellow ground and the remaining [illegible], or 23 per cent., was from overburden, which it was found impossible to separate from the diamondiferous ground. The yield was 8.4 carats per 100 loads, which, taking into consideration the large percentage of overburden, can be considered satisfactory. The amount of lime capping on the western section of the mine considerably hampered operations, as it was found to be of considerable thickness in places, up to 40 feet. I am glad to report, however, that the greater portion of this ground has now been removed and from now on better results in the yield, as well as in the number of loads washed, can be expected. The mine has been developed at the 120 ft. level, where yellow ground of excellent quality has been exposed. The area of the mine shows no signs of contraction, and has been fully maintained down to this level. The water supply for the washing plant from boreholes, which showed a considerable falling off towards the end of last year, due to the drought, has recently been augmented from a fresh source, and we are now getting ample water for our requirements. On the whole, the washing plant ran well, and efficiently treated the large lime ground from the western section of the mine. The plant is capable of treating up to 10,000 loads per month of clean ground. The quality of the diamonds recovered is very good, and the price realised has been quite satisfactory, and with the better diamond market an improved price may be expected. With the satisfactory demand and price for diamonds, considerable profits should result from the operations of this company, and the future can be viewed with confidence." You will agree with me that we can look forward to adequate returns by way of dividends in the near future.

Theron.

Another diamond company in which you are largely interested is Theron. This mine produces stones of very excellent quality, but of a lower yield than West End. Your company had to assist them financially during the non-producing period. In the beginning of the year we made an offer to the Theron Diamonds, Ltd., to reconstruct their company; this was accepted, and enabled them to discharge all their liabilities and have an adequate amount in hand for future requirements. The Theron Mines directors are now restarting washing operations, devoting their attention especially to the blue ground floored in previous years, of which they have over 52,000 loads. The result of these operations will enable the directors to judge if the price of diamonds is already sufficiently high to justify continuous work.

S.A. Alkali, Limited.

In view of the fact that we owned a considerable number of shares in this company, we guaranteed the subscription of half the 8 per cent. debenture issue of £50,000, and undertook the secretarial duties of the company, with a proportionate representation on the directorate. On the satisfactory completion of the negotiations with the Government in regard to the renewal of the lease, work was started to remodel the soda plant at the works and to add the plant necessary to recover the salt. As you are no doubt aware a brine containing a high percentage of salt and soda exists in the pan, and this is a most suitable raw material from which salt and carbonate of soda can be manufactured. The work of redesigning the plant and of providing the most suitable means for efficiently recovering the soda and salt was a difficult matter, and entailed a large amount of detailed, as well as experimental, work. I am glad to state that the soda section of the plant is now in operation and is giving excellent results; the salt section is not quite complete, but will be in operation in a few weeks' time. This section of the plant does not afford the same difficulties as the soda section, and our technical advisers are confident that this section will also work efficiently. The carbonate of soda (soda ash) so far produced is of excellent quality, and should find a ready market at a profitable figure to the company. An output of approximately 8-10 tons of soda and 12-16 tons of salt per 24 hours is expected. On this production the company should earn substantial profits. When the present plant is in full operation and producing its maximum output, the matter of the erection of a plant for the production of caustic soda will be taken into consideration. The brine from the pan is quite suitable for the production of caustic soda, and the profits to be derived from the disposal of this product should be considerable. Generally speaking, the future outlook of this concern is very promising.



Sir Julius Jeppe, Chairman of the S.A. Townships, Mining and Finance Corporation.

South African Coal Estates (Witbank), Limited.

As I informed you at the last annual general meeting, the business of this company was severely affected by the deplorable events during the first quarter of last year. In spite of the most strenuous exertions on the part of the Coal Owners' Association, who are acting as coal sellers for a large number of collieries in the Transvaal and Free State, to recapture the lost trade, very little headway has been made during the year under review. I am, however, very glad to be able to state that since the beginning of this year a decided improvement in the shipping and bunkering trade has been effected and to-day the outlook is certainly the most hopeful we have had since November, 1921, and all our latest advices hold out promise of further improvement.

Before finishing my review of your large interests, I should like to allude to a gold proposition in Rhodesia in which we have lately acquired a substantial interest—namely, the Sherwood Starr. This new property is not far from the Globe and Phoenix Mine, Que Que, Rhodesia, and from results of development to date, looks like being a highly profitable venture. Work was only started at the beginning of the year, and a milling plant is already being erected, and it is anticipated that production will begin before the end of this year on a monthly crushing basis of 2,000 tons or so. Meantime, development continues to expose very satisfactory values, and the outlook is bright.

Rezende Mines, Limited.

The financial position of the company is very sound, and during the present month we expect a dividend of 20 per cent. to be declared, which will be the tenth half-yearly consecutive one, at this rate. The outlook may be considered satisfactory.

As you will see by the list of your shareholdings on the table, we have acquired during the year under review a substantial block of shares in the Johannesburg Consolidated Investment Corporation, also in the Government Gold Mining Areas and the New Modderfontein Gold Mining Company, and have not disturbed our large holding in the Witbank Colliery, Ltd. From all these companies satisfactory dividends can be looked forward to.

A New Flotation.

The prospectus of the Batavia (Rustenburg) Gold Reefs Exploration Co., Ltd., appears elsewhere in this issue. This is a company having for its object the opening up of the gold-bearing reefs on the farms Batavia, Kameelboom and Portugal, which were recently thrown open as a public diggings. The area in question has been much before the public during the last few months, chiefly on account of the high assay values obtained from the reefs. A considerable amount of development work has been done on the property, and we are informed that the reefs (there are two of them) have proved highly payable as far down as the shafts have been sunk on the reef bodies. It is the intention of the promoters of the company to carry on development work on a considerable scale in order to float off one or more of the areas acquired by them as mining propositions. The present company is in the position of a parent company, and is designed to provide the necessary capital for the initial work of development of the ore bodies up to the stage when it will become possible to float subsidiaries. We have been impressed with the many excellent reports brought by engineers and others who have visited the area as to the high gold contents of the reefs, and this certainly seems in a measure to be borne out by the reply of the Minister of Mines, the Rt. Hon. Mr. Malan, to a question put in the House. He said: ". . . Two Government farms formed part of the new Rustenburg goldfield. The mining inspector's report justified these farms being proclaimed. Prospects were encouraging, but he would not commit himself as to the extent of the ore bodies. Water was scarce there, and if water had to be brought from elsewhere, the small man would stand little chance of developing his own." This is evidently an honest attempt to open up and develope an outside district, and it will, if successful, do something towards solving the problem of unemployment in our midst, and ought to be of value as an additional source of the precious metal always needed for the development of the world's commerce. Anything which aims at opening up the mineral resources of the Union will always have our hearty support and warm sympathy, and in this spirit we cordially welcome the new enterprise. We refrain from detailing the various assay values given for the reef. Any one interested in the figures will find these in the abridged prospectus, and complete analyses will be available for inspection, together with the engineer's reports, at the company's offices.

At the first meeting of the directors of Witwatersrand Deep, Ltd., following the annual general meeting held on the 30th May, Mr. John Stephen was elected chairman of the board and Messrs. E. Deeble and H. Gamble were re-elected joint managing directors for the ensuing year.

Over-Taxation of the Mining Industry.

Mr F. A. Robinson, presiding at a meeting of the Anglo-French Exploration Company in London, mentioned the reduction of the company's South African holdings and said that there seemed to be no limit to the burdens placed upon the mining industry, while the attitude in the Union Parliament on the part of a large section of its members was anything, he said, but sympathetic. This had a disturbing effect on the minds of investors.

Improvement in Cement Making.

The use of cement is practically world-wide, and any advance in the process of manufacture is of interest to every builder and constructional engineer. The Co-operative Research Association, formed some time ago by British cement manufacturers, has been devoting attention to a particular aspect of the problem of cement-making in relation to what is known as "slurry." In order that the slurry may be easily pumped, a large quantity of water has to be mixed with the raw materials, and this moisture has ultimately to be removed. It will be easily seen that if the amount of water required can be reduced there will be a great saving in fuel when the material is dried in the kiln. The British Portland Cement Research Association has, therefore, investigated the use of chemicals to be used in the place of water, and the results of their investigations have now been published for the benefit of the whole world. It appears that sodium carbonate is the most promising chemical; and, although the results achieved are very satisfactory, the research is to be carried on still further. It may be pointed out that the investigations are of great interest in the pottery industry as well as in the making of cement.

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The Leeuwpoort Tin Mines Resume Operations.

CHAIRMAN'S REVIEW OF THE IMPROVED OUTLOOK OWING TO BETTER PRICE FOR THE METAL.

Mr. Bailey Southwell, who has succeeded Sir Julius Jeppe as Chairman of Leeuwpoort Tin Mines, Ltd., made a most encouraging speech at the annual meeting of the company this week. Inter alia he said:

The net result for the year, including interest charges, was that the debit balance of profit and loss account was increased by the sum of £16,162. This further intensified the unsatisfactory financial position of the company with which the year 1922 started, and brought up the amount owing to a total of approximately £90,000. This really meant that the company had little choice beyond either reconstruction or liquidation, and the South African Townships, Mining and Finance Corporation, Ltd., who were creditors of your company to the extent of £68,000 odd, as well as the largest shareholders in the company, made a proposal for reconstruction, which was foreshadowed in the chairman's speech of last year, and which has been successfully carried out since the date of the accounts now in your hands.

To bring your information up to date, I will refer to it briefly. The scheme involved the reduction of your capital from £275,000 to £34,375 by giving one 5s. share for every two £1 shares held, and shareholders had the right to subscribe for four new 5s. shares for each 5s. share due to them under the reduction of capital, leaving 12,500 shares in reserve out of a total of 700,000 shares of 5s. each. The issue was underwritten by the South African Townships Corporation for a commission of 10 per cent., and a two years' option on the reserve shares.

Mr. Bailey Southwell, the new Chairman of the Leeuwpoort Tin Mines.

Improved Price of Tin.

In the meantime, the price of tin began to improve, and after the necessary meetings to give effect to this scheme had been held, the response by shareholders, everything considered, was very gratifying, being an indication of the confidence held in the future of the company. As a result of the reconstruction your company is now in a satisfactory financial position with all liabilities paid off and an appreciable amount in hand for whatever capital expenditure is deemed necessary, and/or advisable in the future.

To bring you up to date as regards the operations at the mine since the close of the year under review, I am pleased to be able to inform you that the welcome increase in the price of tin, which took place in the early part of this year, led your board to reconsider the whole position and policy, and as the price appeared fairly stable around £200 and the tendency, if anything, upward, it was decided, as the mine could be worked at a small profit with tin at this figure, to resume normal operations.

A further consideration which carried considerable weight with the board was the probable reduction in working costs, as compared with previous figures, which could be brought about by increased efficiency, a lower price for stores, and a reduction in the realisation charges. Also the use of a wood fuel in the suction gas power plant instead of coal or charcoal will be a contributory factor in the reduction of costs.

It has taken some little time to collect the men we required for running on a three-shift basis, but I am able to inform you that the plant is now running day and night, and is already on an almost normal basis. Ore is being drawn from all sections of the property, and the milling results, which I will give you, show a steady improvement. The figures for March, April and May, in each case respectively, as follows:—

	Tonnage milled.	Concentrates produced Long tons.	Grade to mill.	Recovery grade.
March	1,838	17	1·2	0·6
April	3,600	37	1·4	0·8
May	4,100	48·5	1·3	0·8

It will be seen that we are not yet mining up to the average value which, from previous experience, we expect to get from the ore reserves, but this is principally due to lower grade ore from sources outside ore reserves. As it is of the utmost importance that the ore reserve position should be at least fully maintained, and, if possible, improved, a comprehensive development scheme has been laid out, and will gradually come into full operation as sufficient native labour becomes available.

Many Likely Indications.

Your property is very extensive, and the chance of discovering fresh ore bodies of importance are favourable, as there are so many points both underground and on the surface which have likely indications, and past experience has shown that a vigorous development policy has often been rewarded. In conclusion, with anything like a reasonable price for tin, I see no reason why your company should not earn satisfactory profits, and become a dividend-payer once more.

Knight Central.

A first liquidation dividend of 3s. 6d. per share has been declared by the Knight Central, Ltd.

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The Week in the Sharemarket.

REVIVING TENDENCY AND BETTER SENTIMENT—DIVIDEND ANTICIPATIONS—STATE MINES RISE GREATER ACTIVITY EXPECTED.

During the past week the market displayed some tendency to revive. A better sentiment was evident and with the approaching dividend declarations people are disposed to purchase the better class shares for the distribution. Optimism was to some extent stimulated by the improved returns from the mines for the month of May. Corner House stocks all improved, and in the case of Modders the advance has been appreciable. City Deeps and Nourse Mines have had considerable business, and Durban Deeps and Modder B have both been inquired for. Crown Mines showed a good profit for May and the shares have been a steady market. Anglo-American stocks have been prominent for the inquiry for Spring Mines. The Brakpan capital increase has been confirmed. West Springs have been rather solid. Union Corporation stocks have advanced, there being good inquiry for both Modder Deeps and Gedulds. The General Mining Group shares have been without feature. Barnato stocks are again notable for the advance of State Mines, which appear to be rising on the prospects of a good dividend and in anticipation of the splitting of the shares. New States did not declare for the month of May. Randfontein, although recording a record tonnage, showed a disappointing profit, owing to poor grade. The costs also seem to be too high for the tonnage treated. While this result is unsatisfactory, better may be expected in the near future. Van Ryn Deeps, with a record tonnage, improved on good buying. Langlaagte Estates have been a feature and the price advanced on public buying, only to be checked by London selling. The position is now steadier. Wit. Deeps made a lower return of profit for May. It is, however, said that the corner has been turned at this mine and that a satisfactory dividend will be paid. Diamond shares have been unsatisfactory. Without any evident reason the market has declined. Consolidated Diamonds have been a poor market in spite of rumours of excellent sales of the gems. West Ends have been quiet, and there has been very little doing in other diamond shares. Industrials are without feature. Investment stocks, Banks and Loans have recorded the usual quiet business. The new 5 per cent. Loan does not seem to be attracting attention, and it is generally felt that another opportunity for the introduction of Premium Bonds has been missed. Reserve Banks had transactions around £136. The profits are regarded as highly satisfactory for shareholders. The general market position is sound and there are few open accounts. The healthy condition of the industry is attracting attention both here and oversea, and in view of the better outlook in European politics at the moment, there are grounds for the expectation of more active markets.

	Fri. 1st.	Sat. 2nd.	Mon 4th.	Tues. 5th.	Wed. 6th.	Thurs. 7th.
Anglo-Am. Corp.	23 6*	24 6	24 6*	24 0	24 0	24 0*
Apex Mines	—	6 6*	6 9*	6 6*	6 0*	6 6*
Aurora Wests	—	6 3*	6 3*	6 3*	6 3*	6 3*
Brakpan Mines	66 0*	—	68 0†	68 6†	68 0†	—
Brick and Potteries	4 0*	4 6*	4 0*	5 0*	—	—
British South Africa	—	12 0*	12 0*	12 0*	12 0*	—
Bushveld Tins	0 3	0 3*	0 3*	0 4*	0 3*	—
Cinderella Cons.	3 0*	—	3 0*	3 9†	3 0*	3 6*
City and Suburbans	2 11	3 0†	2 11*	2 11*	2 11*	2 10*
City Deeps	55 6	56 0	56 0	55 6*	55 9†	55 6*
Clydesdale Colls.	17 3†	17 3†	—	17 3†	17 3†	
Con. Diamonds	20 0	20 3	20 7*	20 0	19 9	19 9
Con. Investments	—	—	—	38 0*	—	—
Con. Langlaagtes	13 9*	14 0	—	14 3*	—	14 0*
Con. Main Reefs	9 3*	9 3†	9 6	9 10*	9 7*	9 6
Coronation Colls.	—	32 6	35 0†	—	33 0†	—
Do. Freeholds	0 7†	—	—	0 8†	—	0 7*
Do. Syndicates	—	—	5 9*	5 10*	5 9*	5 1
Crown Diamonds	6 3*	6 4*	6 4*	6 4*	6 2	6 2*
Crown Mines	52 0	52 6	52 9	52 0*	52 6	52 3
Daggafontein Mines	3 2*	3 2*	3 0*	3 0*	3 1	3 1*
Durban Rood. Dps.	16 1*	16 6	17 0	16 2*	16 10	16 1*
East Rand Coals	—	1 6†	—	1 6†	1 6†	1 3*
East Rand Deeps	—	—	0 7*	0 7*	0 7*	
East Rand Minings	—	10 0	10 0	10 0†	10 0*	10 0†
East Rand Props.	5 6*	5 10	5 9	5 6*	5 6*	5 6*
Eastern Golds				0 4*	0 4*	0 4*
Ferreira Deeps	7 6†		7 6†	—	7 6†	7 6†
Frank Smith Dmds	3 0*	3 0	3 1	3 1*	3 1*	3 1*
Geduld Props.	62 0	62 3*	63 0*	64 0	63 9*	64 0*
Glynn's Lydenburgs	13 0*	13 0*	13 6*		13 6*	13 0*
Govt. Areas	110 6	111 0	111 0	111 6	112 0	112 9
Hume Pipes	8 0*		—	8 3*	8 6*	8 0*
Knight Centrals	—	5 10*	5 9*		5 9*	—
Lace Props.	8 3*	8 6†	8 6†		8 6†	8 6†
Langlaagte Est.	20 9*	20 6*	21 3	22 0	21 3	21 3
Leeuwpoort Tins	—	2 6*		2 6*		—
Luipaardsvlei Est.	—			3 0	—	3 0*
Middelvlei Est			1 0*	—	—	1 0
Modder B.'s	24 9*	25 3	25 3	24 3	25 3	24 9
Modder Deeps	43 3*	43 9	43 9*	44 6*	44 3	44 6
Modder Easts	6 3*	6 6*	6 3*	6 4*	6 3	6 4
Natal Navig. Colls	—	25 0*	27 9*	28 0	27 9*	—
National Banks	175 0†	170 0†		—	170 0	175 0†
New Eland Dmds.	—	41 0	40 0*	41 6*	40 0*	41 0*
New Era Cons.	6 9*	7 0†	6 9*	6 9*	6 9*	6 9*
New Kleinfonteins	4 9	4 10*	5 0*	5 6*	5 0*	5 9*
New Modders	79 0*	79 0*	80 0	79 9	79 6*	79 9
New Primrose	2 6*	2 6*	—	2 9*	3 6*	3 0*
New State Areas	36 0	37 6*	36 3*	36 0*	36 9†	37 0†
Nigels	9 0†	—	—		—	8 6†
Nourse Mines	15 0	15 3	15 6*	15 3*	15 3	15 0*
Pretoria Cements	42 6†	40 6*	41 9*	41 3*	41 0	40 6
Rand Collieries	1 0*	1 0*	1 0*	1 0*	1 0*	—
Rand Nucleus	0 11			1 0	0 11*	0 11*
Randfontein Centrals		13 6*				
Do. Estates	20 0	20 4	20 9*	20 7*	20 6	20 3
Rouxville Dmds.	1 2*	1 2*	1 2*	1 0*	1 5†	1 0*
Roberts Victors	8 0†	8 0†	8 0†	8 0†		8 0†
Robinson Deep "A"	35 3	35 0*	35 0	34 9*	35 0*	34 6*
Robinson Deep "B"	12 0	—	—	—	11 0*	11 0*
Rooibergs	3 3*		3 3*	3 3*	3 3*	3 0*
Simmer and Jacks	3 1*	3 1	3 1	3 2	3 2	3 2
S.A. Breweries	32 9†	32 6†	32 6†	32 6†	32 6†	32 6†
S.A. Lands	5 6*	5 9†	5 6*	5 7*	5 11	3 5
S.A. Reserve Bank	£137†	£137*	£136	£136*	£136*	£136*
Springs Mines	48 3*	48 0*	48 3*	48 7½	48 6	48 3*
Sub Nigels	9 3*	9 3*	9 3	9 1	9 1*	9 1*
S.A. Alkali	14 3	14 6*	—	13 6*	13 6	13 6
S.A. Townships	11 3*	11 3	10 9*	11 6†	10 6*	10 6*
Transvaal G.M. Est	8 10*	9 0*	9 0*	9 4½	9 0*	8 9*
Transvaal Silvers	15 0*	15 6*	15 0	*15 3*	15 3	15 0
Union 5 per cent.	£101*	£101½	£102*	£100*	£100¾	£100*
Van Dyks	1 3†	—	1 3†	1 3†	—	1 3†
Van Ryn Deeps	68 0*	68 3*	68 6*	69 0	68 9*	68 6*
Van Ryn Est.	14 0*	15 0†	—	—	—	—
Village Deeps	12 6*	12 6*	12 6*	12 6*	12 3*	12 3*
West Springs	18 9*	19 3	19 1*	19 3*	19 0*	18 9*
West Rand Cons.	5 9†		4 0†	4 6*	—	4 6*
Western Rand Est.	3 0*	3 3	3 6*	3 0*	3 3*	3 0
Witbank Colls.	30 0*	30 0*	30 0*	30 3*	30 3*	30 0*
Witwatersrands	15 0*	—	15 3*	—	—	15 6
Wit. Deeps	16 0	16 0*	16 9	16 0*	16 0	15 9*
Zaaiplaats Tins	5 2	5 0*	5 1*	5 3	5 1*	5 2*

* Buyers. † Sellers.

Union Steel Corporation (S.A.), Ltd.

This important local industry reports this week that the works are very busy.

* * *

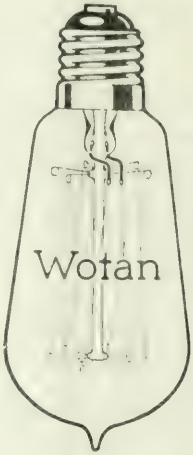
Dunswart Iron and Steel Works, Ltd.

It is gratifying to record that the company has a fair amount of work on hand, which is keeping everything going at capacity; the mills are fully occupied.

* * *

Metal Market Quotations.

London, June 4: Standard copper £67 7s. 6d. cash, £68 three months; electrolytic copper £73 10s. seller's option, £74 buyer's option; copper bars £74; standard tin £197 2s. 6d. cash, £197 7s. 6d. three months; foreign lead £25 15s. prompt, £26 forward; quicksilver £10 7s. 6d.; bar silver 31¼d.; bar gold 89s. per oz.



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TOPICS OF THE WEEK.

The Central Mining Meeting.

What Reuter describes as a "unanimous and enthusiastic" meeting welcomed the speech from the chair by Sir Lionel Phillips at the Central Mining meeting last week. The Central Mining Rand Mines Group is responsible for more than half the annual gold output and profits of the Rand as a whole, so that the fortunes of these great companies are intimately bound up with the future of these fields. It is, therefore, satisfactory to note that the handsome profits earned by the Central Mining last year permit a distribution of 16s. per £8 share, as compared with 12s. for the preceding year, allowing £100,000 to be transferred to reserve (whereas nothing was so allocated twelve months' ago) and leaving the carry forward higher at £92,850. Against a capital of £3,400,000 the corporation has investments entered in the balance sheet at the conservative total of nearly £6,245,000, of which over one-third is represented by gilt-edged holdings. At the end of 1921 the corresponding total was only £5,736,500. In accordance with custom, the holdings are not separately scheduled, but the directors remark that such changes as have occurred during the past year have mainly involved an increase in investments of a liquid character. The realisation at satisfactory prices of some of the corporation's general trading securities has placed it in a position to undertake new business of a progressive nature. As at 31st December last, cash and cash assets showed a surplus over current liabilities considerably exceeding £500,000, and over £300,000 of this will be left even after paying the dividend and bonus now recommended. As the Chairman explained, in a progressive business it was necessary to dispose, periodically, as opportunity presented, of certain accumulated assets to permit the undertaking of new commitments. "Developing enterprises," said Sir Lionel, "particularly in the early stages, offer greater attractions than fully developed undertakings, but involve greater risks, which need careful weighing, but if we never sold we could never buy. This applies particularly to the Central Mining Corporation, and a company like the Rand Mines, with which we were closely associated, but realisation, partial or complete, is not to be interpreted as a loss of confidence in a particular investment. The Rand Mines publishes a list of holdings. The Central Mining Corporation does not, though satisfied with the list, because the public might draw unwarrantable conclusions from the changes effected." We are glad to note that in referring to the financial position of the Union, the Chairman emphasised the necessity for balancing expenditure by revenue. "The public debt of the Union," he said, "was not excessive in view of the size and resources of the country, but steps were essential to balance the Budget and provide a sinking fund for debt redemption, as well as for interest. The worst of trade depression was past, but despite the better outlook there was no apparent justification for maintaining the rate of expenditure by the Government, though conditions of employment shall not fall below the 1914 standard of living." Speaking of world affairs, the Chairman declared that if troubles were to be avoided they must revert to the discipline and control in the management of affairs, which he believed to be proceeding. "Present taxation," he declared, "is a levy on capital, as evidenced in the reduced purchasing power of the world. The recipe for the restoration of real prosperity is individualism, each man doing the best he can for himself and his family. Interference by Governments is detrimental in business affairs, which should be left to business people."

These last remarks were doubtless addressed less to the Union than to the Imperial Government. Nevertheless, they deserve to be seriously pondered by our South African legislators, and we hope to quote from them in greater detail when the complete report of the speech is available.

S.A. Townships, Mining and Finance.

Sir Julius Jeppe reviewed the many and varied interests of the South African Townships, Mining and Finance Corporation at the annaul meeting this week, and extracts from his speech appear in this issue. As is generally known, the Corporation represents an amalgamation of the great mining and land interests of the companies controlled by Sir Abe Bailey. Gold, diamonds, coal, and real estate all fell to be reviewed by Sir Julius Jeppe, and his speech thus reflects the conditions of industry and the state of the property market throughout the Transvaal and Rhodesia. The Corporation's list of investments in gold mining companies is of the gilt-edged variety, and almost all are dividend-paying. Owing to the improvement in the diamond and tin markets, the producers under these headings which the Corporation controls are now restored to the active list, and good results are anticipated for the current year. Coal is likewise looking up, and the Witbank interests of the group are enjoying improved prospects. Detailed extracts from the chairman's speech at the Leeuwpoort meeting are also printed in this issue, and it will be seen that the outlook for all the activities of the great Bailey enterprises is very materially better than it was a year ago.

Conciliation.

In the course of its progress through the Select Committee stage the new Conciliation Bill experienced some strange and wonderful "improvements" at the hands of the labour ministers. A clause No. 14 has been inserted, which reads as follows:— "It shall be unlawful (a) for any employer to make any alteration in the terms of employment of any employee, or (b) for any employee to demand an alteration of the terms of his employment, unless one calendar month's notice of such alteration or of such demand has been given by the employer to the employee or by the employee to the employer, as the case may be; provided that a shorter period may be agreed upon by both parties."

Naturally, when this clause came to be read strong protests were made on all sides, and urgent representations have been made to Capetown by all the employers' organisations. The offending clause will doubtless be expunged before the third reading of the Bill, but the incident serves to emphasise the danger of allowing legislation to be rushed through without adequate scrutiny. The daily papers have been busy during the week anticipating the result of the inquiry into the mechanics' demands for an increase of wages. It does not require much perspicacity to guess what the finding will be.

Port Elizabeth and East London Harbours.

The second part of Sir Geo. Buchanan's report on the harbour developments proceeding in South Africa has now been published by the Government. It deals with the schemes of new works and port improvements at Port Elizabeth and East London, the recommendations and conclusions of the Consulting Engineer being based in each instance on considerations of the volume of trade and shipping handled at these ports, the revenue and expenditure, and the existing productiveness and potentialities of the immediate hinterlands. As regards Port Elizabeth, after consideration of all the circumstances of the case, both from technical and other points of view, Sir George Buchanan agrees that the inclusion of the north breakwater would give Port Elizabeth a very magnificent and complete harbour, but he cannot agree that this is urgently necessary or even to be thought of for many years to come. He contends that if, with no protection at all, delays to shipping are so few as to become almost negligible, the construction of a south breakwater which will admittedly give shelter from the worst storm is sufficient for the time being. The work of constructing the south breakwater is in hand and being done departmentally; the estimated cost in 1914 being £1,500,000. At present rates the cost will probably be nearer £2,200,000, or £258 8s. per lineal foot, and he is disposed to think that the work would be carried out cheaper and more expeditiously if let by contract. With regard to the East London Harbour works, he finally states that he cannot see the necessity for a new eastern breakwater for many years to come, nor does he consider the time is ripe for the construction of a turning basin to accommodate vessels 800 feet long. He, therefore, recommends: (1) That the South Breakwater be completed to the full sanctioned length of 2,500 feet. (2) That the East Pier and East Training Wall be rebuilt, as shown on his plan, which would not materially interfere with the Bathing Beach, as sand will probably accumulate on both sides of the new East Pier. (3) That dredging in the channel and river be continued as funds permit.

The Rhodesian Mining Outlook.

Rhodesia has bulked largely in the public eye in the last few days. October has been officially announced as the date when Responsible Government is to come into force, and the name of the new Governor is eagerly awaited. Last week the Treasurer, Mr. Fynn, presented his financial statement for last year, which had several interesting features. The figures shown on the whole were satisfactory, and had it not been for expenditure on famine relief to the natives they would have come out without any deficit, in fact, with a small surplus. Expenditure on famine relief was the chief cause of the excess expenditure. The sum of £59,000 had been provided on the estimates, but the famine was widespread and the total cost of relief was £72,000. They had recovered £23,389, leaving the net cost of that item at £48,913, which amount would be recoverable in the course of time. Revenue at £1,526,400 gave £140,000 more than the estimate, of which the main item in excess was Customs duties, viz.: £403,339 as compared with the estimate £340,000. Income tax also yielded about £50,000 more than the estimate. Imports for the past year amounted to £3,761,000, compared with £5,091,000 in the previous year, a decrease of 26 per cent., but, excluding railway material, the decrease was only 21.9 per cent. South African imports fell by 18 per cent., exports dropped very slightly from £4,761,000 to £4,605,000, a decrease of £156,000. Incidentally the Treasurer mentioned that the Wankie coal area showed an amount of 6,000,000,000 tons of coal in sight which would be sufficient, if landed in Europe, to pay the whole of the British national debt. Base minerals showed a slight drop, although copper showed an increase of £1,300 over the previous year. Gold exported was valued at £2,605,000, taking the standard value as the basis of calculation, or £306,000 more than in the previous year. In quantity it was 670,000 ounces as against 592,000 ounces. Chrome ore was exactly double the previous year at £220,000. There was, therefore, an apparent balance of £941,000 in favour of exports, but that was a somewhat misleading figure, because in valuing imports they took the Home cost, which did not take into account carriage, insurance and freight. In regard to the new financial year the expenditure was estimated at £18,000 or £17,000 less than last year's estimates. As to revenue prospects the position to-day was slightly better than it was this time last year. The mining industry was active and further activity was indicated while agriculture was distinctly better. The fly in the ointment was the cattle industry, which showed no immediate prospect of improvement. In this connection it is noteworthy that a distinct revival in the Rhodesian mining industry is recorded by the Acting Secretary for Mines (Mr. G. N. Fleming), in his report for 1922, just issued. Especially was there a marked increase in the number of small workers, and Mr. Fleming compares the position in this respect with the great part played by the individual miner when he first came on the scene in that country. The recent efforts which we have recorded for establishing a Government-aided scheme for helping the small worker should receive much encouragement from this report, which shows that the "small" man is not confining himself to prospecting for minerals but is developing and mining the properties thus found. To this he is incited by the recent process of company amalgamations, which reduces the number of possible purchasers of new discoveries, many of which, it is admitted, can be worked profitably by the small man but not under company management. The reduction in the price of mining plant and commodities has helped the industry, and in this connection we are glad to note the continued willingness of engineering firms to supply machinery on easy terms. There is also reason for optimism in the case of the larger mining undertakings. The old belief that the mines of Rhodesia did not continue at depth is refuted by examples to the contrary that are mentioned in the report, such as the recent satisfactory developments at the 11th and 12th levels in the Cam and Motor, and the fact that the Lonely is now working at a depth of over 3,000 feet, while the Globe and Phoenix is not far short of this figure. No newly discovered fields are recorded in the report, which, however, holds out every encouragement for a progressive and scientific system of prospecting.

Liquid Oxygen in Mining.

The paper by Mr. Alfred James on "Liquid Oxygen in Mining" which has been appearing in our pages has met with a somewhat mixed reception. It will be remembered that the paper was read before the Institution of Mining and Metallurgy in London, and some of the members of that body have subjected the views of Mr. James to very direct criticism. Thus Mr. William Cullen did not mince matters in concluding his contribution to the discussion. He declared: "I must confess that I have read Mr. James's paper with considerable disappointment. It is not worthy of him.

and the general impression left on my mind is that he is not very certain of either his facts or his figures." Elsewhere in the course of his remarks, Mr. Cullen said: "When I was a young man, keen on my job and anxious to retain it, I used to become terribly anxious when the newspapers, and, occasionally, even the technical papers, came out with detailed accounts of a new explosive just discovered. It was generally stated to be, if not as strong as the strongest explosive known, nitro-glycerine, very nearly so, and only cost a fraction of what nitro-glycerine cost; in addition, it was infinitely safer to use. As time went on I got hardened, nay, callous, and that is my position to-day. The truth is that there are some fundamental omissions from Mr. James's paper, which he, with his knowledge of mining, ought not to have overlooked." And again Mr. Cullen said: "If there is one field in the world where the economies of mining have been studied more thoroughly than in any other it is the Transvaal. There, as in Germany, glycerine had to be conserved for other purposes during the war, and the grade, or strength, of explosives was dropped very considerably for the time being. The rock was broken all right, but, when peace conditions returned and stronger explosives became available, it was found that stronger and more costly explosives were in reality cheaper in the long run. Specific gravity is therefore, to my mind, the most important factor in this matter."

Provincial Taxation of Companies.

With sublime disregard for the warnings of all those who know anything of the facts, the Provincial Executive pursues its plan further to tax companies in the Transvaal. We printed the letter from Mr. Gemmill, setting forth the reasons against the proposed tax, and during the week Dr. Reitz in the Provincial Council delivered himself of a confused attempt to reply to Mr. Gemmill. The latter lost no time in publicly replying, but for all the good that may be expected to result he might have spared himself the trouble. The Provincial Executive do not want the facts. They are enamoured of the new tax and they are determined to go through with it. Mr. Gemmill's very moderate statement of the case will, however, appeal to all sensible men. He shows that the speech in which Dr. Reitz attempted to justify his precious companies tax is merely a tissue of inaccuracies, and he has no difficulty in demonstrating how little weight can be attached to the arguments with which the companies tax is supported. But the real sting is in the tail of Mr. Gemmill's letter. In his concluding paragraphs, he writes:

"Some members of the Provincial Council may have read the speech of the chairman of the Central Mining and Investment Corporation at the annual meeting of that company a few days ago. If so, they will have noticed to what a large extent the corporation is directing its attention to other fields, largely on account of the more favourable attitude adopted towards capital in those countries. In Canada the taxation of gold-mining companies is less than half of what it is in South Africa, while in one or two important countries—competitors with South Africa for capital—there is no income tax at all. The Gold Producers' Committee would again ask: Are members of the Provincial Council really unaware that large sums of money are urgently necessary for the further development of the Transvaal? Do they suppose that the controllers of that money will be attracted to invest it in the Transvaal by constantly increasing legislation deliberately planned to penalise such investments?"

That puts the whole matter in a nutshell. There is nothing, of course, to stop the Provincial Executive continuing its ill-informed and amateurish essays in taxation till they have killed all confidence, enterprise and initiative in the Province.

The Mines, Native Labour and Cotton.

It is not always that we see eye to eye with Mr. Frances Joseph Dormer, who presides over the destinies of the Transvaal Estates and Development Co., Ltd., but some remarks of his at the recent annual meeting of that company in London are very much to the point. Having delivered a very convincing tribute to the prospects of the cotton industry in this country, he went on to say:—"There is one other thing that may militate against the wide extension of cotton growing in the Union, and its importance is so manifest that I take occasion to mention it. As you are no doubt aware, the mines of the Transvaal have for many years drawn the bulk of their unskilled labour from the Portuguese province of Mozambique. For reasons into which I need not enter, there has lately been a change of policy in this regard, the Union Government taking the view that work in the Union should be reserved as far as possible for Union natives and the recruitment of Shangaans severely curtailed, although they stay eighteen months on the mines, as against the Union natives' six. It is not for us to cavil at this policy; but we may at least point out some of the consequences that are likely to ensue upon its adoption. It will certainly tend to diminish the supply of native labour available for agriculture and thus increase its cost, incidentally adding to the difficulty of getting cotton-growing established as a native industry, and of agricultural development in general. Furthermore, if the day should come, as come it may, when mining wanes, as it has waned in other countries when impossible conditions have been created, the economic disturbance cannot fail to be greatly enhanced if the mines should at that time be drawing their supplies of unskilled labour wholly from the Union itself instead of largely from adjacent territories. These are considerations which I cannot help thinking it may prove unfortunate to overlook. There can be no question as to the anxiety of the present Government of the Union to increase the agricultural production of the country. If it is not yet perceived by the people at large how important a place cotton might occupy in their scheme of things, and what an incomparable asset they have for this purpose in their native population, one can only hope that this perception will not much longer be denied to them. A leaf might well be taken out of the Australian book in this connection. Increased production out there—and they are going to increase it, and that largely—is not going to proceed so much on the lines of large plantations as on the number of small producers. I would say, therefore, to my newspaper friends in the Union, who play so large a part in the creation of public interest, and are by no means insensible to the need of a larger volume of production, that they could render no greater service to their country, and incidentally to this, than by hammering away at this subject until there is no garden in South Africa where cotton cannot be grown, and no native field either, without its cotton plot." These trenchant remarks from Mr. Dormer will, we hope, have due weight in the proper quarter.

Gold and Exchanges.

Interesting views on how the gold stored in the Bank of England might be used to protect the exchanges were expressed by Mr. F. A. Govett, the chairman of the Ivanhoe Gold Corporation, in mail week. He states that for nine years past in Great Britain they have worked, with safety and satisfaction, on a basis of inconvertible paper—for the Bank note and Treasury notes are not convertible, and it is no use pretending that they are. That is the position now, and still the paper is just as good as gold in every way, except that it is wrongly worded. Instead of bearing the words "The Bank will pay on demand," the words should be "Legal tender for," and all difficulty would be met. All that is wanted is the certainty that the Government will not use the printing press and create redundant currency by paying its debts in currency, that it will not issue more currency than is demanded. Since 1914 no currency has been issued in excess of actual need, and as the need for currency has grown less, the currency in circulation has contracted. That, however, is not the immediate point, except that the hoarding of the hundred millions or so of gold in the Bank, as backing on the notes, affects the position in that the gold cannot be used to protect the exchange. That is what Mr. Govett has always urged, that the gold should be used to protect the exchange, and let the notes stand on their natural basis, which is the national credit, as legal tender. Some time ago Mr. Govett urged that the whole of the gold in the Bank should be "hurled at America." "They don't want it," he said, "they don't know what to do with what they have got, and sooner than [illegible] the exchange still [illegible] That, he says, is the actual explanation of what has admittedly happened. The gold went to the best market, and steadily found its way to America. Instead of Australian and [illegible] gold going home, it went directly or indirectly to America; and as they were forced to buy and to accumulate the millions of gold which they did not want, the price of gold fell naturally, the price of gold and the New York exchange being one and the same thing. This, Mr. [illegible] says, is a full and sufficient explanation of the rise. He would now take the £125,000,000 still in the Bank and use it in this way—not send it all at once as part payment of the British debt, for that would have no effect, but, as exchange [illegible], "pump it" into America in a steady stream, and the exchange, he believes, would steadily rise still further.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal is now visiting Natal and Rhodesia with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

Transvaal Estates and Development.

Under the difficult conditions of 1922 the directors of the Transvaal Estates and Development Co., Ltd., may be congratulated on being able to report a profit of only about £5,000 less than in 1921, that is, £21,602. For the sixth year in succession a dividend is recommended of 6d. per share free of tax, and this will leave £5,018 to be carried forward, against £8,057 brought in. The company made a profit of over £12,000 on the sale of investments last year, but the result of farming operations was disappointing owing to an untoward season. The investments stand in the balance sheet at £221,346, and of these a very large proportion is represented by gilt-edged holdings.

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### Rezende.

For 1922 the Rezende Mines, Ltd., has, as the result of the considerably reduced price of gold, to report a lesser profit than for 1921, namely, £55,082, against £66,135. All the same, total dividends have been maintained at 1s., in spite of the distribution having to be made on the additional 30,000 bonus shares given to shareholders last year. There is £12,336 to be carried forward, against £20,254 brought in. The ore reserves have increased to 148,400 tons, valued at 9·85 dwts. per ton, as compared with 140,512 tons, averaging 9·5 dwts., at the end of 1921. It is satisfactory to note that development values have been maintained in the bottom levels. The general manager points out that the latest estimate of ore reserves includes 5,400 tons of 14 dwt. ore which has been developed in the Streatham section. The energetic development of this section is stated to be proceeding now that the water difficulties have been overcome. An option to purchase three blocks of claims, known as the Elgin Blocks, was obtained in August, since when the work of reclaiming the shaft has been proceeded with, and shortly information will be available of the width and value of the reef exposed in the old 240 ft. level.

Klerksdorp Gold Mining.

The Afrikander gold output for the month of April totalled 820·45 oz., value £3,485, from 2,509 tons of ore worked. The old Buffelsdoorn returned an output of 102·41 oz., value £435. The old tailings site of the late West Bonanza turned out 32·87 oz., value £140. The district's total output thus amounted to 955·73 oz., value £4,060.

* * *

Consolidated Mines Selection.

The 1922 report of the Consolidated Mines Selection Company covers a transitional period, and the results shown are much superior to those of 1921. The net profit proves to have been nearly £57,900, against only £23,700 for the previous year. The company was lucky in making a profit of £19,500 on the sale of securities in 1922, against a loss of £11,250 experienced on the same account during 1921. Twelve months ago no dividend was paid, whereas 1s. 3d. per share is being distributed in respect of the past year. This entails the reduction of the carry-forward by a few thousand pounds to £21,700. As from the middle of 1922 the South African assets of the Consolidated Mines Selection Company were taken over by the Anglo-American Corporation of South Africa for a large payment in cash and shares. Thus the chief asset of the former concern became 808,981 Anglo-American shares. On that basis each Consolidated Mines Selection share is now represented by rather more than two-thirds of an Anglo-American share, and should, consequently, other things being equal, receive at least two-thirds of every dividend declared on the latter. In respect of the past year the proportion has been rather higher than this. The Anglo-American Corporation has recently paid a dividend of 1s. 6d. on its own shares, whereas the holders of Consolidated Mines Selections are receiving 1s. 3d. each on theirs.

* * *

Lonely Reef.

The results of the Lonely Reef Gold Mining Company of Rhodesia for 1922 are of special incidental interest as reflecting a full year's operation of the gas producer plant—which, it may be recalled, was installed owing to the increasing shortage and cost of wood fuel for the steam boilers. The reduction effected in working costs is a striking one, last year's average of 37s. 5d. showing a difference of 13s. 7d. compared with the 1921 figure. In the main this is due to the new plant, although lower charges for stores are a factor. On the other hand, it was necessary to mill ore substantially below the grade of that sent to the mill in the previous year, the averages being 17·6 dwts. and 21 dwts. respectively; and, of course, the price received for the gold won was less than before. The net result is a profit of £93,850, in place of £133,720. Consequently, maintenance of the dividend at the 30 per cent. level has entailed a substantial draft upon the carry-forward. Although some fairly good ore was opened up in the deeper levels, development scarcely replaced the tonnage extracted, while the grade showed a decline of over 1¾ dwts. to 16¼ dwts. per ton. This, it will be noticed, is below the value of the ore treated last year. Recently, however, some very high-grade ore has been opened up at the 25th level.

GLYNN'S LYDENBURG, LTD.

The following are the results of the operations of this company for the month of May, 1923:—Tons milled, 3,722, yielding 1,350 ounces; estimated value of month's output, £5,870; estimated profit for month, £274. The above figures are exclusive of expenditure for the month upon shaft sinking, special development and capital expenditure amounting to £3,558. The gold output for the month is valued at £4 5s. 9d. per fine ounce net, after allowing for exchange and realisation charges. Reduced profit due to lower tonnage resulting from stoppage of large tube mill for repairs and inclusion in working costs of £700 abnormal expenditure upon maintenance and new equipment.

Letters to the Editor.

WATER POWER v. STEAM.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—A writer in the daily papers says: "There is a proposal to spend £1,000,000 on a new electric generating plant at Witbank. There is an accumulation of small coal there that can be had for very little. On the Tugela River there is 150,000 h.p. at low water that can be had for nothing; this is quite within practicable distance of the Rand. A generating plant at Witbank would have to be scrapped in a few years. A hydro-electric plant on the Tugela would always be a paying proposition. The Witbank plant would be imported; the Tugela plant could be made here, giving much-needed employment and spending money here instead of overseas. A steam plant requires much expenditure; a hydro-electric plant requires very little and produces current very cheaply. Lying in Durban harbour is an iron sailing ship, which I am told could be bought for £500. Here is cheap material to make pipes, etc. There are many unemployed and it is said that capital is waiting investment. Here is lots of work for our unemployed and a gilt-edged investment for capital. Set one lot of men digging the necessary conduits for the water and another lot breaking up the ship and riveting up the pipes, and so on. Even if the current was sold very cheaply, the cost of production would be so small that it should be a better paying proposition than any gold mine.—Old Engineer."

It is not only about the economics of industry in this country that piffle is talked and written by "fools who rush in where angels fear to tread." The foregoing letter is probably the most priceless contribution of the century to the humour of this land. Lest, however, it pass muster as common sense with some of the unthinking members of the community, it may be worth while roughly examining the suggestions so cheerfully and courageously put forth. It is doubtful if a survey of the Tugela River has ever been made; no information on the subject has been published in the Press of recent years. Probably the stated amount of "150,000 horse power" is a guess, like the further information vouchsafed that "this is quite within practicable distance of the Rand." The Tugela River is certainly within practicable distance of the Rand; a Chevrolet would probably accomplish the distance in about seven hours, although the railway journey takes nearer fifteen hours. That the "150,000 horse power" is within practicable distance is open to grave doubt on financial grounds, apart from mere technical reasons, which should perhaps be taken into account if the scheme is to become "a better paying proposition than any gold mine." It is not very clear why "generating plant at Witbank would have to be scrapped in a few years" while "a hydro-electric plant on the Tugela would always be a paying proposition." The letter is very definite that the Tugela plant could be built in this country, while the Witbank plant would have to be imported, but there are slight difficulties in the way. One obstacle is that there are no firms with the plant, staff or facilities generally for building large generators and turbines, which, strangely enough, are necessary even with a water power scheme, to say nothing of the switchgear, transformers and minor accessories of a large electric power station whether driven by steam or water. Of course, the real gem of the dissertation is contained in the idea of buying an old iron sailing ship for £500 and converting it into iron pipes. There is a great fascination in the scheme of engaging two gangs of unemployed, and sending one gang to the Tugela to "dig the conduits for the water" and the other to Durban to take a sailing ship to pieces and re-assemble it in the form of iron pipes. The writer of the letter, unless he is "leg-pulling," which the seriousness of his letter belies, seems to think that digging "conduits" and making iron pipes out of ships' plating are equally simple jobs, neither requiring much skill or training or machinery. We have often read the platitude about "beating swords into ploughshares," but this is the first suggestion in history "to rivet sailing ships into iron pipes." Maybe, with a little encouragement, the writer of the letter will furnish some details of the power line route from the Tugela to the Rand, the voltages of generation and transmission, the nature of the contracts he proposes to enter into for the disposal of the power to be generated, and, finally, of the financial arrangements for the entire scheme, which is to be a "gilt-edged investment." The idea of supplying the gold mines with electric power by means of water "conduits" and iron pipes of sailing ships is on a par with some of the tripe handed out as wisdom on the subject of the gold premium, the living wage and the tyranny of capital by some of our Labour leaders, one of whom had recently to have it explained to him in the Union House of Assembly that corduroy is used by gold mines in the process of gold recovery and not for the cheaper clothing of natives.—Yours, etc.,

E. F. R.

NEW KLEINFONTEIN.

Operations at New Kleinfontein in May were as follows: Tons milled, 41,300; fine ounces output, 10,830; value, less cost of realisation, £46,427; working costs, £49,260; working costs per ton (excluding development), £1 1s. 1d.; development to working costs per ton, 1s. 2d.; total working costs per ton £1 2s. 3d.; loss, £2,833. The revenue derived from gold for the month is calculated at the rate of £4 8s. 6d. per fine ounce.

NORTH RHODESIAN MINERAL OUTPUT.

The following are the chief figures from the official return of the mineral output of Northern Rhodesia for April, 1923:—Gold: Jessie D.B. Mine (J. A. Cowie) produced with two prospecting mills 139·17 oz., value £584 10s. 1d. Sasare Mine (lessee, A. R. Campion) obtained by sluicing 25·61 oz., value £107 12s. 10d. Also premiums, £12 13s. 2d. Velocity Mine (E. C. Mills) obtained from pannings 3·07 oz., value £12 17s. 3d. Total gold produced in year to date, 678·87 oz., value £2,950 16s. 6d. Silver: Jessie D.B. Mine (J. A. Cowie) produced with two prospecting mills 21·29 oz., value £2 2s. 6d. Velocity Mine (E. C. Mills) produced ·07 oz., value 3d. Total silver produced in year to date, 81·52 oz., value £8 2s. 11d. Lead: Broken Hill with blast furnaces produced 1,125·60 tons, value £16,884. Total lead produced in year to date, 4,927·05 tons, value £139 5 3s. 11d. Total value of mineral output for April, 1923, £17,603 16s. 1d. Total value of mineral output for March, 1923, £21,179 18s. 2d. Total value of mineral output for April, 1922, £35,245 15s. 1d.

The Rustenburg Gold Fields.

In the course of a reply last week to Mr. Munnik, the Minister of Mines said that two Government farms formed part of the new Rustenburg gold-field. The Mining Inspector's report justified these farms being proclaimed. Prospects were encouraging, but he would not commit himself as to the extent of the ore bodies. Water was scarce there, and if water had to be brought from elsewhere, the small men would stand little chance of developing his own.

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INDUSTRIES SECTION.

Money from Monkey Nuts.

A NEGLECTED POSSIBILITY OF THE NORTHERN TRANSVAAL—MACHINERY WANTED TO EXTRACT VALUABLE OIL—FERTILISER AND FODDER FROM RESIDUE—CHANCE FOR FARMERS' CO-OPERATIVE FACTORY.

There is a good deal more in the monkey nut or the pea nut, as it is more popularly known in this country—though in official and agricultural circles it is generally designated the ground nut—than one might imagine. It is certainly much in favour as a toothsome delicacy in the streets of Johannesburg, where the portable ovens in which the nuts are roasted, are a familiar feature, and emit an appetising odour that many people find irresistible.

Adequate as must be the profit at the prices at which the roasted nuts retail, when compared with the price the farmer obtains for them, there is a much more remunerative return available to the farmer or others who realise all the possibilities of the humble pea nut. It is very rich in an oil of valuable qualities, which forms an excellent substitute for olive oil, and, in fact, has been largely used as an adulterant in this oil. The nuts, or seeds, as they are in reality, yield from 42 to 50 per cent. of oil by cold expression, but a much larger quantity is obtained by heat, while by the latest method of extraction, the benzine process, it is claimed that not more than 1 per cent. of oil is left in the residue.

The plant is very prolific, yielding in some instances 30 to 55 bushels of nuts per acre, but South African growers have never yet exploited this crop to anything like its possibilities. In 1920-21 a little over 19,000 acres were under cultivation for ground nuts, of which the yield was 14,244,000 lbs., rather more than half of this coming from the Transvaal. In that year 905,259 lbs. were exported, the value being £10,501, but last year the exports fell to 24,162 lbs., valued at only £260. Of the 1921 yield, France took more than four-fifths—711,559 lbs.—and Germany came next with 125,927 lbs.

Good for Salad and Soap.

But it is not necessary to have recourse to the overseas market if ground nuts were cultivated as a commercial proposition. In a comparatively small way Mr. D. F. Gilfillan, a well-known Johannesburg solicitor, has been, on his farm in the Northern Transvaal, studying the potentialities of the ground nut, and in conversation with a representative of "The Mining and Engineering Journal" he gave us the benefit of his experience and research. The ground nut is one of the leguminous plants that form nitrogen nodules on the roots, and for that reason it is a very good crop for increasing the nitrogen contents of the soil and has the same effect as peas and beans in rotation of crops. The ground nut will grow in almost any soil—a poor sandy soil that would be useless for maize would prove quite suitable for ground nuts, and this crop is much more drought resisting than maize. It is, in fact, said Mr. Gilfillan, an eminently suitable crop for the Northern Transvaal, and confirmation of this comes from the old Boer farmers of the Springbok Flats, who say that that district is better suited for ground nuts than for maize.

Mr. Gilfillan is satisfied that the ground nut produces one of the best edible oils obtainable, and it is on this account that the nuts have been sent in considerable quantities to Italy, France and other Mediterranean countries. It has the advantage that it improves with keeping and has not any tendency to become rancid. The analyses made by the Royal Colonial Institute showed that the Transvaal pea-nut gives a higher proportion of good oil than the nuts obtained from Mozambique or Gambia. The inferior oils from the nut—the second and third pressings—are excellent for soap-making, while the cake is excellent as a fertiliser and cattle food.

Although there is already a fairly good demand for the nuts as a native food—being used in the compounds—and for confectionery, it could undoubtedly be much more profitably exploited by means of crushing machinery for the extraction of the oil. As already stated, between 40 and 50 per cent. of the oil can be "expressed" by a comparatively simple and inexpensive process, but the yield would be doubled by the installation of a more efficient and up-to-date plant at a central factory to which the farmers and cultivators who might specialise in this crop would send the nuts. The cake which remained would find a ready market as a cattle food and fertiliser.

Railway rates make it practically prohibitive to grow the nuts on a big scale, such as would be encouraged by the erection of a crushing plant within easy reach, and it would seem, therefore, that the farmers of the district might with advantage co-operate in such a scheme. The possibilities have already attracted some attention. The representative of big commercial interests in Holland some little time ago had this matter brought to his notice, and after a personal investigation he reported most favourably. Mr. Schlesinger, of the African Realty Trust, has also had under consideration a project for exploiting the pea-nut, and there would seem to be a promising opportunity for some enterprising British or American firm making the requisite machinery to demonstrate the utility of their plant for the purpose.

One of the difficulties which has hitherto stood in the way of any extensive cultivation of the ground nut is the fact that the crop is somewhat expensive to reap; the nuts, which are attached to the roots, have to be pulled by hand, but a form of plough, with stripping machinery and shellers to prepare the nuts for the crusher, could doubtless be adapted. Certainly if it has been worth while for firms in France, Italy and Germany to import the nuts, in spite of the railage and shipping freights, for the sake of the oil to be extracted, it should be much more profitable for the producers to obtain that oil in the neighbourhood of the plantations, especially when they would, in addition to the oil, have a valuable residue in the form of fertiliser and fodder.

THE STORY OF ROCK DRILLING.

An 8,000-ft. mining film taken under the joint direction of the U.S. Bureau of Mines and the Sullivan Machinery Company is being shown in the United States. The original purpose of this film was to be used as an educational film to be shown at the various mining organisation meetings held from time to time in the United States. The set consists of 4,000 ft. of film, the title of which is "The Story of Rock Drilling," 2,000 ft. entitled "The Story of Coal," and 2,000 ft. showing the method of manufacturing rock drills, coal cutters, and other mining and quarrying machinery.

Welgedacht Exploration.

The Welgedacht Exploration Co., Ltd., continues to maintain a "waiting policy." At the annual meeting this week the chairman, Sir Julius Jeppe, mentioned that the company had ceased to function as a coal producer since 1920. With regard to the gold area, he said "nothing has occurred in our neighbourhood during the year under review which would justify a change in the waiting policy adopted by us during the past." Meanwhile the funds of the company are being conserved and are earning good interest.

RHODESIAN MINES AND MINERALS.

GEOLOGICAL SURVEY—DIRECTORS' REVIEW—MR. H. B. MAUFE'S REPORT ON A YEAR'S WORK —ASSISTANCE TO PROSPECTORS.

In the course of his report for the year 1922, issued last week, Mr. H. B. Maufe, the Director of the Geological Survey of South Rhodesia, after reviewing the work done in the Mount Darwen, Bubi, Mazoe and Lomagundi districts writes:—

During the year 238 determinations of minerals and rocks have been made by Mr. Reekie for the public, and reports furnished thereon. It is believed that this service is appreciated by prospectors and others interested in the development of the mineral wealth of the country, though its existence is not as widely known as it should be. In addition to the above, a large number of determinations involving verbal replies were made by the other technical officers, both in the field and elsewhere. Further, many enquiries were answered both verbally and by letter on questions of prices, markets, grades of ore, suitable areas for prospecting particularl minerals, or likely minerals to be found in particular areas, etc. Much the larger part of this work fell to the Director. No mineral not previously recorded in the Territory has been found during the year, and it is the exception rather than the rule that the specimens determined for the public are of minerals which have any economic value at present. Many are iron-ores for which no use is likely to be found in the immediate future, although these are very abundant in the Territory. A special report on the iron-ores of the Territory, prepared by the Director, was published by the Imperial Mineral Resources Bureau. This report classifies the iron-ores under seven types, according to origin and mode of occurrence, and gives examples of each type with analyses where these are available. Specimens of lead ore, galena, have been received from the Melsetter District. Some of these show the galena occurring along with pyrite in a dolerite which has been epidotized. This is a type of ore new to the country, and no ore-deposits have hitherto been found in association with these intrusions of dolerite. Other specimens show galena in an epidotized quartzite, and galena and chalcopyrite in a gangue of vein-quartz. No copper ores of sufficient richness to be worked have been received, but the following copper-bearing minerals were examined:—Chalcopyrite, malachite and chrysocolla. Numerous specimens regarded by finders as cassiterite have been received, but nearly all have proved to be iron-ore, and no likely tin deposits have been recorded. In the last quarter of the year enquiry was received from a buyer in the Union regarding possible supplies of tantalum ore, and a few weeks later a specimen was received from the Victoria District. A partial analysis of this material showed 74 per cent. of tantalic and niobic oxides. The value of this ore would depend solely on the tantalic oxide content, but unfortunately the reagents required for the separation of these oxides were not obtainable either in this country or in the Union. Two samples of manganese ore, which appears to be scarce in S. Rhodesia, were received, both apparently coming from the rocks of the Lomagundi system. A partial analysis of one specimen gave 55·4 per cent. of manganese equivalent to 87·7 per cent. of pure pyrolusite. The residue (12·3 per cent.) contained a considerable amount of silica. This ore comes from near Maysma farm, 22 miles west north-west of Sinoia. Monazite has been recorded from the Lomagundi District. The specimens of country-rock received with it are granite, hornblende-gneiss and mica schist. Large, well-formed hexagonal prisms of beryl from the Lomagundi mica-fields have been received. These beryls occur with the mica in pegmatite veins traversing a mica-schist country. Some stones cut by Mr. Goldberg, of the Grand Parade Mine, show that they have little value as gems. Specimens of chrome-iron-ore, asbestos (chrysotile and amphibole), and magnesite from localities where these minerals are not worked have been reported on. The number of rock determinations carried out for the pupils was 65. The majority of these rocks are from the gold belts, and many of them are hanging wall and foot wall country-rock from the mines. In the hope of throwing some light on the vexed question of the origin of the rock which forms the impregnated ore of the Shamva Mine, an analysis was begun, but was not finished at the end of the year. The laboratory is not yet fully equipped to deal with these analysis, or indeed with every mineral that may be sent in, as shown in the case of the tantalum ore mentioned above.

At the end of the year the bulletin on the geology of the country west of Sinioa was very nearly completed, the geological map being actually in the printer's hands. As already reported, a longer period than originally estimated was required to finish this bulletin, and this has delayed progress with the bulletin and coloured geological map on the country around the Queen's Mine, Matabeleland. Preliminary reports on the geology of part of the Mount Darwen District, and of the country around the Lonely Mine, Bubi District, have been commenced, and will be ready for publication before the beginning of the next field season.

SELECTED NEW PATENTS.

Arthur John James Smart. Improvements in indicating and recording the operation of hoisting machinery.

South African Rubber Manufacturing Company, Ltd. Improvements in indicating and recording the operation of hoisting machinery.

South African Rubber Manufacturing Company, Ltd.—Improvements in plate supports for electric accumulators.

John Wills Cloud, The Wesgtinghouse Brake and Saxby Signal Co., Ltd.—Improvements in fluid pressure braking apparatus.

The British Power Railway Signal Co., Ltd.—Improvements relating to electrical switchpoint detecting and like apparatus.

Carbic, Ltd.—Improvements in or relating to the manufacture of calmium carbide cakes.

British Engineering Standards.

The Transvaal Coal Owners' Association (1910), Ltd., recently approved a grant of 100 guineas for the research work required for the revision of the "Standardisation of Coal Analysis and Sizes of Coal and the Determination of Calorific Value." This work, which was published in 1912, is now being revised and will shortly be published by the South African Branch of the British Engineering Standards Association. The public-spirited action of the Association in coming forward with support for research in a matter of such importance to South Africa affords a welcome example of the energy and vitality of our public bodies; an example which it may be hoped will be generally followed.

* * *

The "C.M.S." Meeting.

At a meeting of the Consolidated Mines Selection, Mr. W. McDermott, Chairman, said as regards the gold mining income there was reason to expect continued good results in view of the developments which had been undertaken, and now that the cost of working had been reduced. Regarding the diamond market, Mr. McDermott said in the opinion of some of the directors with practical experience extending over many years the market promised well. On the question of the probability of the Anglo-American Corporation dividing its earnings liberally, the Chairman said he did not see any reason for doubting that the shareholders would receive dividends in reasonable relation to earning, particularly as the cash position to-day was a very strong one.

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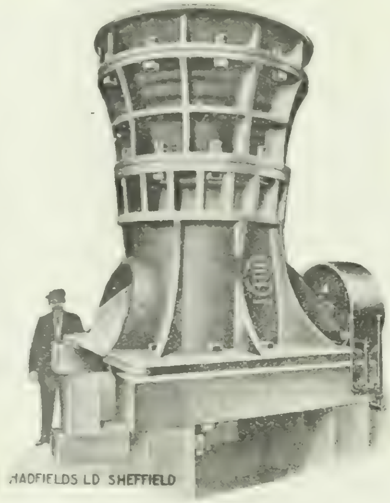

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ENGINEERING SECTION.

Drill Steel; A Subject of Vast Importance to the Witwatersrand Mines.

ITS FORGING, HEAT TREATMENT AND TEMPERING.—SOME VALUABLE ILLUSTRATIONS.

By H. S. Brainerd.*

III.

The heat treatment recommended for drill steel bits about 1[illegible] inches in diameter is to heat to 1440 degrees Fahrenheit for the same distance back that they were heated for forging and to quench the teeth only in water or brine. When the entire steel becomes black it may then be quenched all over in water with safety.

As the size of the bit increases, short heating for hardening has a greater tendency to cause failure. Fig 21 shows a bit received from a property where a serious steel breakage was occurring. The examination of the fracture indicates a condition similar to that shown in Fig. 15. The breakage was due to weakening effect of the large grain size left by the high forging heat and which had not been removed by heat treatment. The breakage ceased when the bits were correctly heat-treated.

It is generally supposed that the higher the temperature used for quenching the harder the steel will become. This is incorrect, and Fig 22 shows the relation of the hardening temperature to the hardness for pieces of $\frac{7}{8}$-inch hexagon hollow quenched in brine. The hardness has been measured by two different types of apparatus. In the Brinell method, a hardened steel ball 10 mm. in diameter is pressed into the specimen with a load of 3000 kg. for a half minute. The diameter of the resulting impression forms the basis for hardness determination. In the scleroscope method, a tiny diamond-pointed hammer is dropped about ten inches upon the object and the height of the rebound is estimated upon an arbitrary scale.

Fig. 22 also shows the fractures of $\frac{7}{8}$-inch hollow hexagon drill steel hardened in brine at several temperatures. These photographs may be used for a guide in the estimation of the quenching temperature used. If the blacksmith will harden a small piece of $\frac{7}{8}$-inch hollow hexagon at the temperature usually used and the steel shows a refined structure throughout the entire cross-section, the heat is too high and should be lowered until the fracture shows a hardened outer shell and a tough inner core. It will be noted that the holes in the steel shown in the photograph are not round. This has been caused by the break and the position in which they were photographed.

A curve for the oil quench shows that at high temperatures a $\frac{7}{8}$-inch hexagon hollow shank will become quite hard. The extreme end of the shank facing the striking end of the piston becomes harder than the body of the shank. The curve has been plotted from the hardness values obtained on this end, so that they may be compared with the hardness of the piston.

The effect of the quenching temperature upon the hardness and the drilling speed in granite of $\frac{7}{8}$-inch hexagon hollow steel with a 1[illegible]-inch cross bit is shown in Fig. 23. The granite block used on the first run was appreciably harder than that used on the second and third runs. Each run was made with a BCR 430 "Jackhammer," using 70-pound air pressure. The steels were heated for five inches of their length in a lead bath and only the teeth quenched in brine. Six steels were quenched from each temperature and were run all three minutes before they were rebitted. The points plotted for the steels hardened from 1600 degrees Fahrenheit for the second and third runs, represent only four steels each, as two of the six on each run spalled off several teeth due to the brittleness caused by the high quenching temperature.

Figs. 24 to 28, inclusive, show the fractures of hardened bits which have been heat treated at five different temperatures. The bit in Fig. 21, which was hardened at 1375 degrees Fahrenheit, shows a hardened zone which is thin and not fully refined. The low heat has prevented the quenching action from penetrating to the centre of the unhardened inside or core and refining it. The unrefined portion seems to be crystalline in appearance. Hardening from this temperature will give erratic results, and a large portion of the steels will be soft. When hardened at 1400 degrees Fahrenheit, the zone of hardening shows considerably deeper in Fig. 25 than when hardened at 1375 degrees Fahrenheit, and is well refined. The higher heat has allowed the quenching action to penetrate to the centre and refine it. An illustration of a bit hardened at 1440 degrees Fahrenheit is shown in Fig. 26. The hardened zone is deep and nicely refined while the core has received the benefit of the quenching action and is refined as well. Fig. 27 shows what may be expected when hardening is carried on at 1480 degrees Fahrenheit. The hardened zone is deep and the grain is rather coarse, the core also being hardened by the intense quenching action set up by high temperature. A bit hardened at 1600 degrees Fahrenheit is shown in Fig. 28. The high temperature has caused the entire section to harden through. The fracture is coarse and crystalline and the steel is very brittle.

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*Chief Metallurgist, Ingersoll-Rand Co., Phillipsburg, N.J., U.S.A.

MEASURING THE HARDNESS OF DRILL STEEL.

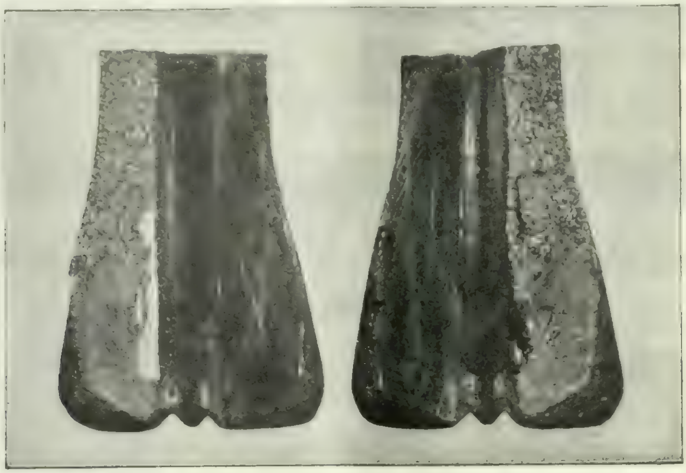

Fig. 21.—Result of not overlapping the forging heat with the quenching heat.

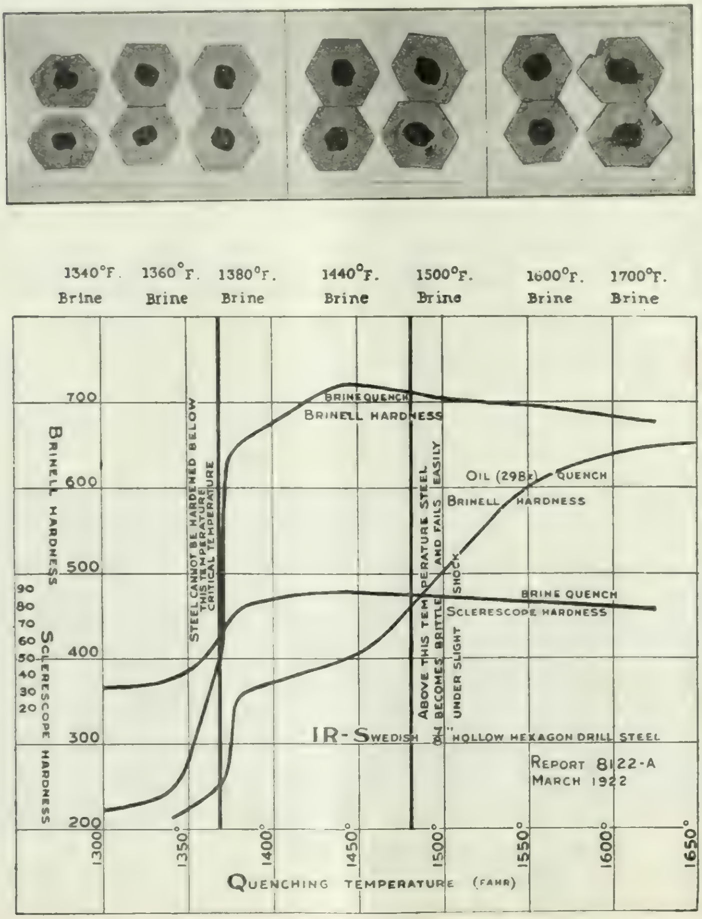

Fig. 22.

(To be continued.)

Gigantic Generators.

Niagara Falls, the greatest single source of water power in the United States, will transform more of its great power into electrical energy through the two largest generators ever made. These gigantic generators, being made by the General Electric Company, to be installed on the American side of the great falls, will each produce 87,000 horse-power, or energy equivalent to the muscle power of 375,000 men. Each generator will weigh 700 tons, will stand 35 feet high, and will have a diameter of 35 feet, and will be the largest generators in the world, both in size and capacity. This is another step in the further development of the water power resources of New York State. Dr. Charles P. Steinmetz estimates the total undeveloped horse power of the water power resources of this State alone as 1·2 million, as compared to 1·3 total horse power now developed. The 1·2 million horse power of undeveloped water power owned by this State, if developed, would save over 10 millions tons of coal, or more than enough to operate all industries, public utilities and railroads, so that coal would need to be used for domestic heating only. In addition this saving would release for other uses 500 locomotives and 15,000 coal cars now continuously in use to carry this coal; and over 90 million pounds in railway equipment. The lower cost of hydro-electric power would save this State about 30 million pounds annually, besides making industrial cities and towns clean and smokeless, Dr. Steinmetz declares.

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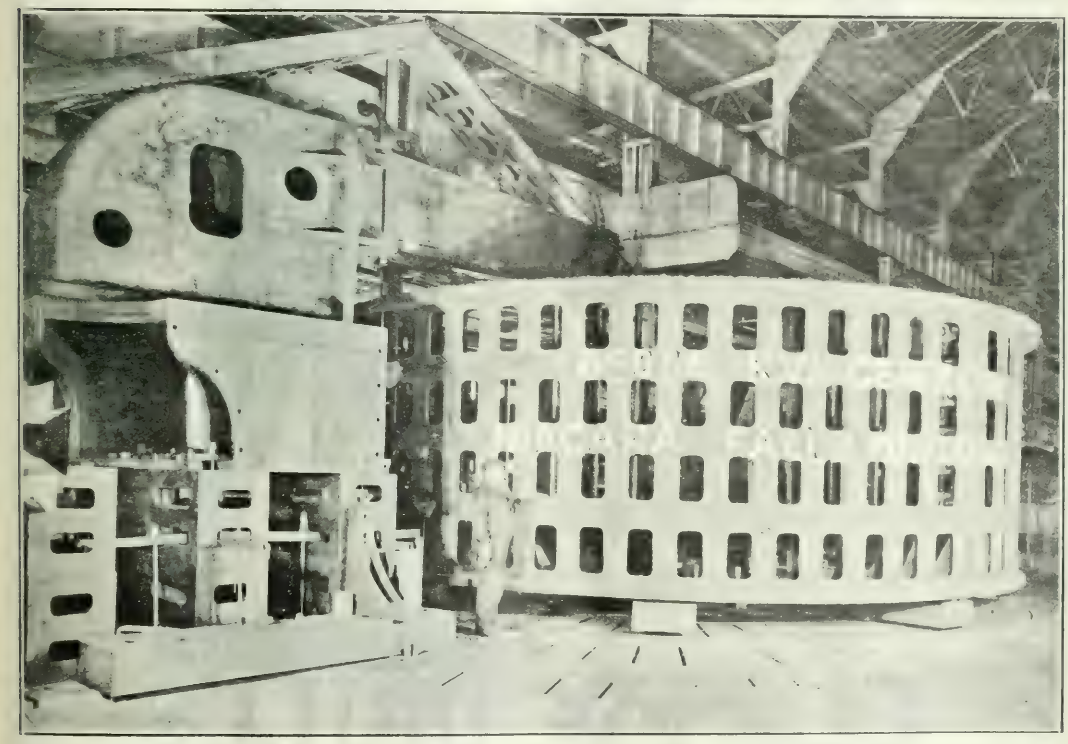

This generator was made by the General Electric Company, U.S.A., for the Niagara Falls Power Company.

Directors' Responsibilities.

The practice of employing the resources of a mining company in ventures which have little to do with the business for which the company was formed is a subject of considerable importance to shareholders, says *The Statist*. It is easy to see that if it is carried too far the company loses its special character and becomes an investment or trust company. Directors—however innocent—cannot avoid coming under the suspicion of diverting the profits from the pockets of the shareholders into speculative ventures in which they stand personally to benefit. Confidence in their disinterested service must inevitably be shaken. There is something to be said for investing surplus resources in a new undertaking when a mine is played out, especially if a promising property presents itself in the neighbourhood, and it is easy for a vote to be taken for or against the policy. Our readers will remember that an Australian mining company has made investments in silver mines in Canada, and that the Rhodesian Selukwe Company took up interests in British Columbia, investments which in both cases have turned out favourably. These are examples of companies whose original properties have become impoverished or exhausted. There can also be no objection to the investment of a mining company's funds in commercial companies doing business of benefit to the mine, such as electric or power companies. But when still active mines make investments in remote countries the case is very different.

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TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL, BUT PROSPECTS HOPEFUL—EUROPEAN POSITION IMPROVED—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—LATEST METAL QUOTATIONS.

General.

The week under review has ruled quiet on the Commercial Exchange and elsewhere. As stated in our notes of last week, the present month is the end of the financial year for the mines and commercial firms, with its attendant stocktaking responsibilities, which means, of course, that all purchases save those of the most necessary character are left over until July. In a chat this week with a commercial captain, he said people were now undoubtedly beginning to be optimistic as to the near future and to our weathering the present depression very shortly. There is, he said, a feeling of hopefulness in the mercantile community to-day of an improvement setting in in general business conditions which has been markedly absent for a long while past. Why this sanguine feeling should exist is, he said, one of those things that one really cannot logically explain; but of the fact that such hopes do exist here that we are on the eve of better times, and, indeed, within measurable distance, there is no doubt. He, for one, thought that this hope of betterment in general business conditions was well founded, and that we could look forward now to an improvement—perhaps only slow, but nevertheless sure—in commercial activities after the turn of the half-year. By that time the Union's cereals should be marketed and the money accruing therefrom be in circulation, a fair proportion of which is bound to find its way eventually to Johannesburg.

The European position still presents great difficulties to people on this side, but, reading between the lines, one cannot but come to the conclusion that some arrangement is likely to be made by which the present world-suicidal policy (or want of policy)—retarding, as it does and has done, for five years universal prosperity—may be righted and restore the much-needed and longed-for equilibrium. Notwithstanding the latest French *equivoque* regarding the Ruhr position, little doubt remains in the mind of anyone that France will only be too pleased to retire at discretion from an untenable position. In this connection it may perhaps be permissible to recognise now the masterly inactivity hitherto adopted by the British Government, who have foreseen better than most of us the inevitable result of the French invasion. With the accession to power of Mr. Stanley Baldwin, the British Government's policy in respect of Allied questions has undoubtedly assumed a more vigorous tone, and hopes are high that future British action will prove more efficacious than the past "masterly inactivity" of Britain regarding this world question, which, although sound in the opinion of many, and which, as a matter of fact, has stood the test of time, has also left a nasty taste in the mouth of Britons. In the opinion of commercial circles, there is no doubt that we shall shortly hear of another offer by Germany, which will be more seriously taken to heart by France, and which should tend to better world's conditions. There is no doubt whatever among commercial circles that the settlement of the German reparation question is the crux of the whole position. With a satisfactory settlement things can eventually assume normality, without it chaos can only continue, and the longer a settlement is held up the longer and more severe will world conditions continue.

Things generally in South Africa are certainly looking quite well, and reports from all sources point towards this country being one of the biggest beneficiaries in the world's progress. We are, said a prominent commercialist this week, setting our house in order to grasp any upward movement in the shape of trade conditions that may come along, and he thought that any benefits going would certainly to a very great extent be captured by South Africa. It was only shortage of capital which was keeping us back, and when the world question should have been settled a fair amount of capital would come to this country for the development of our potential wealth in gold, diamonds, agriculture and other industries. A pointer in respect of the European question is that prices to-day are slightly on the down grade, which seems to prove that the great commercial centre of Germany is likely to be a formidable factor in production. Cable news this week reports that prices are receding somewhat. This may again be another instance of events casting their shadows before! Another point, said this very shrewd commercialist, is that we don't know what Germany has been storing up during all these months. Not all of them have been idle, and there is the possibility that a considerable amount of goods has been stored and could be put on the market as soon as a settlement had been arrived at. These people, he said, in common with all of us, will want money, and there is every possibility that goods may be forthcoming from that quarter very shortly.

The keynote this week, from the big to the small, has been the tightness of money and the difficulty experienced by all in collecting accounts. This difficulty will, it is hoped, be overcome after the end of June, when the Union's crop results should circulate much-needed money. Engineering shops appear to be quite busy with various lines, and have no reason to complain just at the moment. The community just wants to see an uplift to give it a little heart. The present and recent depression has been a very severe one for the country generally. However, as stated above, and for which no logical explanation can be given, there is undoubtedly an optimistic feeling prevailing in commercial circles that better times are at hand.

Iron and Steel.

Business this week has been on the quiet side. This month being the end of the financial year of most firms, stocktaking activities preclude any branching out in the shape of purchases, merchants being only too anxious to reduce stocks and to purchase only absolutely necessary requirements. As regards prices, a leading mining and material merchant this week said that in a great many lines these, instead of rising in sympathy with home quotations, were, as a matter of fact, receding. Stillson wrenches, at 56s. for 14 in. a dozen, were going for below replacement value; these wrenches, he said, could not be imported to-day at under 70s. Hammer handles again were being severely cut, going for 14 in. at about 4s., and 36 in. 11s. 6d.; the importation of these to-day would cost at least 6d. a dozen more than the price at which they are being sold.

Today's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes, about 30s. a ton more; ⅞ and 1in., 25s.; chequer plates, 27s. 6d.; [illegible] imported flats, ⅛ x 3-16, ¾ x ¼, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ½, 27s. 6d.; larger sizes up to 4 in., 25s.; ⅝ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all N. Borton Crown Brand). Imported mild steel flats, 25s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 27s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges, 1s. 9d. lb. Brass sheets, ¼ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. 8d. per lb. Phosphor tin, 2s. 10d. per lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅝d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in. to 36 in., 10s. 6d. to 11s. 6d.; 42 in., 20s. 6d.; piping, ¾ in. black, 5d.; 1 in., 5¾d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 56s. and upwards; barbed wire, "Shortthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

The prices of South African asbestos on the London market are: Blue crude, ¾ in. to 1½ in., £30; 1½ in. to 1¾ in., £40.

Britain—Mail Advices: Iron and Steel.

The Outlook.—Increased quantities of semi-finished materials have been offered in the British market by Continental suppliers. These included billets, steel bars and wire rods, amounting to several thousand tons. Buyers, however, are chary of buying in the present indefinite condition of affairs. At the weekly meeting of the London Iron and Steel Exchange there was rather more activity. Inquiries showed a distinct revival, and there were indications of improvement. A better inquiry on the part of home consumers was also noticed.

Pig Iron.

Business has slackened off considerably of late and in consequence prices have become rather easier. The quotation for Cleveland and Midland foundry iron for delivery six weeks to two months ahead has been shed to the extent of 2s. 6d.; but the price of basic seems to be well maintained, although little business is passing.

Semi-Finished Materials.

Large quantities of Continental goods have been on offer, steel bars being quoted at £7 15s. f.o.b., billets at £7 15s. to £8. British prices for billets are £8 10s. Considerable quantities of Continental wire rods have been offered at about £11.

Finished Material.

Belgian works have quoted for steel bars as low as £8 6s. f.o.b.

Oils and Chemicals.

Business in industrial oils and in chemicals has been quiet.

Petroleum.—Oil for domestic purposes is 11d. to 1s. per gallon; oil in large quantities for steamship boiler use is £3 10s. per ton, and for Diesel engines for internal combustion use, £4 5s. to £4 7s. 6d. per ton. Lubricating oils: American cylinder oils, pale, £11 5s. to £27 10s. per ton and dark, £12 17s. 6d. to £29 10s. per ton. Machine and engine oils, 2s. 1d. to 2s. 8d. per gallon. Motor spirit, 1s. 7d. to 2s. 1d. per gallon; benzol, 1s. 7d. to 1s. 8d. per gallon; methylated spirits, 2s. 1d., to 2s. 5d. per gallon; turpentine, 107s. 6d. per cwt.; linseed oil, 49s. 9d.; castor oil, 53s. per cwt. Tar and tar products: Crude tar, £4 10s. to £5 per ton; pitch, £9 per ton. Chemicals: Caustic soda, £20 per ton; nitrate of soda, £13 5s. per ton; borax, £28 per ton.

Quotations.

Cold rolled brass has been reduced ½d., making the basis price in Birmingham 10¼d., in England and Wales 10½d., and in Scotland and Ireland 10⅝d. Bobbin brass has also been reduced to 11¼d. per lb., delivered Nottingham. Other basis prices are as follow: Strong copper, £106 per ton; brass sheets, 8 lb. and heavier, to 10 gauge, 10¾d.; 10 to 16 gauge, 11d.; 16 to 24 gauge, 11¼d.; copper sheets, 12d.; brass wire, basis size and quality, 10¾d.; 10 to 12 gauge, 10⅞d.; 12 to 14 gauge, 11⅛d.; 14 to 16 gauge, 11⅜d.; 16 to 18 gauge, 11½d.; 18 to 19 gauge, 12d.; 19 to 20 gauge, 12¼d.; copper wire, to 10 gauge, 11¾d.; 10 to 12 gauge, 11⅞d.; 12 to 14 gauge, 12⅛d.; 14 to 16 gauge, 12⅜d.; 16 to 18 gauge, 12½d.; 18 to 19 gauge, 13d.; 19 to 20 gauge, 13¼d.; copper tacks, 16½d.; copper rivets, 19d.; copper washers and wires, 25½d.—all per lb. Tin plates: Birmingham, basis price, 20 by 14, 28s. to 28s. 6d., f.o.r. Birmingham.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt lots; mild steel fencing, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 21s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 24s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 21s. per cwt. Bolts and nuts, 50 per cent. discount.

Quotations.

Pig iron.—Cleveland, Foundry No. 1, 130s.; No. 3, 125s.; No. 4 forge, 117s.; mottled, 112s.; hematite, mixed Nos., 122s. Finished iron and steel.—Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £9 10s.; hard, £10 5s.; bars and angles, £10; tees, £11; joists and channels, £10 5s.; sheets, singles, £14 10s.; doubles, £15; lattens, £15 15s.; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

Tin Mining in Cornwall.

The advance in tin has had a marked effect in improving the conditions of Cornish tin mining. There are eight or ten mines now at work, and it is hoped that in a few months all able-bodied men engaged in the industry will have an opportunity to work.

The amount of reparation levy collected upon the importation of German goods into Britain during the three months ended March 31 was £2,096,594, compared with £1,953,058 during the previous quarter.

The Electrification of German Railways.

Unqualified public and professional interest is centred on the German Government's present efforts to circumvent its coal shortage by the electrification of all State railways. By demonstrating the superiority in service and economic efficiency of electricity over steam, it is hoped to offset the handicap to German railway transportation resulting from the occupation of the Ruhr coal fields and the deliveries previously made under the Versailles Treaty. Not only railways, but factories as well, will be compelled to use electric power. There is not sufficient water power to meet the country's needs, and coal will continue to play an important part. However, the only coal fields remaining in German hands yield a product which has proved unsuitable for locomotive use, but which may be used in connection with steam turbines with some efficiency. The penetration by the French into Germany's most important bituminous coal district has forced the German State Railway Administration to withdraw a large number of trains. Even now the remaining trains run principally on imported (British) bituminous coal. Also the limits in the measurement of locomotive boilers, influenced by the requirements of bridge and tunnel profiles, necessitate the exclusive use of high-grade fuel. Leipzig is already the terminus of several electrified lines.

Trade and Industry in the Netherlands show Improvement.

The unfavourable influence which is being exerted by the Ruhr occupation on shipping and trade in the Netherlands is still keenly felt, but the general situation is still somewhat improved over that of a month ago. Greater activity is noticed in the agricultural and other interests—notably the electric machinery industry, which is receiving great impetus as a result of a decrease in German competition. On March 31 coal shipments from Germany were resumed, with the result that the existing industrial tension was somewhat relieved. The consolidation of a number of important industrial concerns in the Netherlands is expected to take place soon. Arrangements are now under consideration, for instance, providing for the absorption of the Holland South Africa Lines by the United Netherlands Co. The completion of this deal depends upon the approval of the Government, which has heretofore granted subsidies to the latter company. The Amsterdam Rubber Co. and the Netherlands Rubber Co. are considering an amalgamation which would form the largest rubber company in the Netherlands.

United States.

Pig Iron.—The production of pig iron in April exceeded all records and amounted to 3,547,550 tons, which is approaching an annual rate of 45,000,000 tons. No. 2 foundry Bessemer and basic are quoted at $31, Western Pennsylvania and No. 2 foundry at $27 to $28, Birmingham, where the cast-iron pipe factories have placed fairly large orders. Steel scrap is easy at $24.50.

Semi-finished Materials.—There is a shortage of semi-finished steel, and the merchant mills are finding it difficult to obtain sufficient to maintain output.

Finished Material.—Mills are averaging about 93 per cent. of capacity, the United States Steel Corporation working at 95½ per cent. Prices are advancing. The American Sheet and Tinplate Co. advanced its third-quarter prices, and is quoting sheets, 28-G., $3.85; galvanised sheets, $5; sheets, 10-G., $3; and tinplate, $5.50. The independent mills are quoting $3.85 to $4.25.

Wages.—Puddlers' wages in the Youngstown district have been advanced for May and June by 5 per cent. A new scale for sheet mill wages is to be considered in July.

Railway Material.—The railway companies have ordered about 100,000 tons of rails from the Western Mills, and the New York Central Railway is inquiring for 150,000 tons.

Belgium.

The market remains flat. The coke position is rapidly improving. Belgian coke plants are running at 80 per cent of their capacity, and it would appear that the industry is obtaining a share of the coke obtained from Germany.

Pig Iron.—Prices are still on the down grade, and are expected to go much lower. The weakness has been accentuated by the rekindling of blast furnaces in Lorraine, where Ruhr coke is said to be arriving in quantities sufficient to enable supplies to be offered to the Belgian market. No. 3 foundry is quoted at 520 frs. to 525 frs., and for steel-making iron 400 frs. to 410 frs.

Finished Iron and Steel.

Parcels of merchant bars are being offered at 630-650 frs. per 1,000 kg.; heavy section angles, 685 frs.; heavy section joists 670 frs.; light section joists 680 frs. Imports to Britain from Russia during the quarter ended December 31, 1922, were £4,986,104. Exports and re-exports from Britain to Russia during the same period were £1,338,082.

Second-hand Machinery.

The market, said a prominent second-hand dealer this week, has been active, with numerous inquiries, but with increasing scarcity of supplies. There are, he said, a few outside lots of machinery which can be purchased at reasonable rates, but the railage prevents dealers from buying, so that it is a case of having to wait until further stocks come into the market locally. There are several inquiries for boilers and engines of the larger type, mostly for industrial concerns in Natal and some in the Cape Colony, because Johannesburg being the depôt, as it were, of all and any kind of machinery, we have the first call. As stated last week, second-hand plate is very scarce, so that the merchants of new stocks ought to be having a good time just now. There are very large quantities of second-nuts and bolts still in dealers' yards; these are practically a dead stock, and even throughout the present scarcity these are very little called for, although most of the stocks are as good as new. There is very little bar iron, round and flat, to be had; what there is is practically pieces of scrap, which the blacksmiths of the town buy when they have the opportunity. Battery spares are very scarce, and companies are compelled to purchase new, hence the increased cost of milling at the present time. Generally, second-hand dealers cannot complain, as there are sales daily even for local requirements; although not in sufficient quantity to keep them going, they are still a turn-over and practically pay expenses. Dealers are all looking forward to further stocks coming on the market, but the general impression seems to be that it will be several months before they will be supplied with another complete line of material.

Timber and Building Materials.

Prices of timber, although firm, remain practically unaltered. Stocks are fairly good, with the exception of some sizes of scantlings, which are still short, but are expected to assume normality in a short time. Business, owing to the activity in the building trade, has been very satisfactory for some time past, and is expected gradually to improve. The prices of bricks also remain unchanged, but the tendency is firm. The building trade is really good just now and has been for weeks past, and although no outstanding contracts are under way at the moment, the number of good and medium-sized jobs is very satisfactory. Building contractors are looking forward to increased activity after the turn of the half year. Wages in the building trade remain as before, notwithstanding the agitation on the part of Durban and Capetown unions.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3⅞d.; floorings, 6d. to 6¼d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d. to 9d., very firm. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine 1s. 3d. to 1s. 4d. per ft. of 1 x 12 here; American pine shelving, 9d. per ft. 3 ply wood, 3 m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. ft.; oak and teak, 3-ply, 10d. per sq. ft. Klompje bricks, 25s. per 100 at works; fire bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12in., 6s.; 15in, 7s. 6d.; 18in., 9s.; dry red oxide, 14s. per 100lbs; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

South African Townships, Mining and Finance Corporation, Limited.

(Incorporated in the Transvaal).

REPORT OF DIRECTORS

FOR THE YEAR ENDED 31st DECEMBER, 1922

Submitted to the Shareholders at the Twenty-third Ordinary General Meeting held in the Board Room, Clewer House, Simmonds Street, Johannesburg, on Wednesday, the 6th June, 1923, at 10.30 a.m.

To the Shareholders:

Gentlemen,

Your Directors beg to submit their Report and the audited Financial Statements for the year ended 31st December, 1922.

CAPITAL.

The registered capital of your Company remains as last reported at £988,053 0s. 0d. in 1,976,106 shares of 10s. each.

South African Gold Mines, Limited (in Liquidation), Debentures

stand at £18,700 0s. 0d., representing the unredeemed Debentures at the close of the year, being, as previously explained, a liability taken over from the South African Gold Mines, Limited, at the time of amalgamation.

Sundry Creditors, Deposits, etc., at £337,643 16s. 11d.,

represent the usual outstandings in the course of business and moneys deposited with your Corporation at low rates of interest.

Reserve Account at £285,547 18s. 2d.,

being a decrease of £55,160 19s. 6d., which is the amount your Directors have considered it advisable to write off Assets.

ASSETS.

Townships and Town Properties—£316,122 14s. 3d., being a decrease of £23,041 15s. 10d., due to sales effected during the year, and an amount of £14,361 3s. 0d. in respect of Electric Light and Water Installation, Waterkloof, having been transferred to Machinery and Plant Account.

Farm Properties—£328,043 14s. 11d.,

shows a decrease of £10,636 18s. 8d., accounted for by farms sold during the year, and an amount of £17,090 16s. 10d. written off for depreciation, whilst on the other hand certain portions of farms have been purchased in connection with the Irrigation Scheme, which will be fully dealt with at the General Meeting. A list of your farm holdings is attached hereto.

Houses and Buildings—£135,901 17s. 5d.

During the year two new houses were built at Waterkloof, and the School at Auckland Park (referred to in last year's report), was completed. Ample provision has been made for depreciation.

Mining Ventures and Mineral Rights—£15,926 4s. 8d.,

shows an increase of £2,620 11s. 2d., due to additional expenditure in connection with the development of the Mamre proposition, which will be fully dealt with at the General Meeting.

Farming Ventures, Livestock, Tools, Vehicles, Machinery and Plant—£32,730 5s. 4d.,

shows a considerable increase on the previous year's figure, due to an amount of £14,361 3s. 0d. having been transferred from Township and Town Properties, as mentioned above under that account. Ample provision has been made for depreciation.

Plantations, Fencing, and Farm Buildings—£8,554 3s. 4d.;

a slight increase on the previous year's figure, due to additional fencing; ample provision has also been made in this account for any possible depreciation.

Bonds and Loans—£513,762 12s. 3d.,

all at a good rate of interest and fully secured.

Sundry Purchasers Account Farms, Houses and Freehold Conversions and Stands—£169,746 17s. 0d.,

represents balances outstanding in respect of building loans, farms, etc., and the whole of the amount is adequately secured.

Sundry Debtors—£93,762 12s. 2d.,

represents Dividends declared (since paid), licences outstanding at the close of the year, and sundry amounts due in the ordinary course of business.

ENEMY SHARES—£8,776 2s. 3d.

During the year under review, by arrangement with the Custodian of Enemy Property for the Union of South Africa, 24,310 shares in the Corporation held by him on behalf of ex-enemies, were purchased at the figure mentioned above. Since the close of the year a further 28,835 shares have been purchased. With the latter deal the total holding of ex-enemy shares in your Corporation has now been acquired. The ultimate disposal of these shares is under consideration by your Directors, and you will be notified in due course as to their recommendation.

SHARE INVESTMENTS—£621,130 8s. 9d.

All shares of which the market value at 31st December last was less than that shown in the books, have been written down to market value; no account has been taken of any appreciation in the value of your other share holdings.

PROFITS.

The year's business has resulted in a profit of £60,546 11s. 7d. Taking into consideration the disturbances, etc., in the early part of the year, this can be considered satisfactory.

DIRECTORS.

You will be asked to elect two Directors in the place of Messrs. E. M. Hind and Bailey Southwell, who retire by rotation in terms of the Articles of Association, but are eligible and offer themselves for re-election.

AUDITORS.

You will be asked to fix the remuneration for the past audit, and to appoint Auditors for the ensuing year.

JULIUS JEPPE, *Chairman.*
EMRYS EVANS,
W. VAN HULSTEYN,
E. M. HIND,
W. J. GAU,
W. NELSON,
G. B. PASCOE,
Directors.

The Head Office,
Clewer House,
25 Simmonds Street,
Johannesburg.

South African Townships, Mining and Finance Corporation, Limited

(Incorporated in the Transvaal).

Dr. BALANCE SHEET, 31st December, 1922. Cr.

Dr.		
To Capital— 1,976,106 Shares of 10s. each, fully paid		£988,053 0 0
Note.—Of the above Issued Capital of 1,976,106 shares, the Company has purchased from the Custodian of Enemy Property for the Union of South Africa 24,310 shares. Since the close of the financial year a further liability in respect of 28,835 shares has been incurred.		
.. South African Gold Mines, Ltd. (in liquidation)— Debentures unredeemed		18,700 0 0
.. Sundry Creditors	£130,101 1 2	
.. Deposits	207,542 15 9	
.. Standard Bank of South Africa, Ltd.	308,974 18 2	
		646,618 15 1
.. Shareholders— For Unclaimed Dividends		1,105 0 4
.. Reserve Account		385,547 19 2
.. Appropriation Account		206,958 2 0
N.B.—There are contingent liabilities in respect of guarantees, etc.		
		£2,246,982 16 7

Cr.		
By Properties—		
Townships and Town Properties	£316,122 14 3	
Farm Properties	328,043 14 11	
Houses and Buildings	135,901 17 [illegible]	
Houses in course of erection	74 13 0	
Mining Ventures and Mineral Rights	15,926 1 8	
		£796,069 4 1
.. Farming Ventures, Live Stock, Tools, Vehicles, Machinery and Plant	32,730 5 4	
.. Plantations, Fencing and Farm Buildings	8,554 3 4	
		41,284 8 8
.. Bonds and Loans	513,762 12 3	
.. Sundry Purchases o/a Farms, Houses, Freehold Conversions and Stands	169,746 17 0	
.. Sundry Debtors (including Dividends receivable)	93,762 12 2	
		777,272 1 5
.. South African Townships, Mining and Finance Corporation, Ltd.—24,310 Ex-Enemy Shares (at cost)		8,776 2 3
.. Share Investments		621,130 8 9
.. Cash— On Current Account and in Hand	1,462 12 5	
Dividend Account	987 19 0	
		2,450 11 5
		£2,246,982 16 7

W. E. DRUMMOND, Secretary.

JULIUS JEPPE, Chairman.
EMRYS EVANS, Director.

We have audited the Balance Sheet of the South African Townships, Mining and Finance Corporation, Limited, dated 31st December, 1922, above set forth, and have obtained all the information and explanations we have required. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Corporation's affairs according to the best of our information and the explanations given us and as shown by the Books of the Corporation.

O. F. BROTHERTON,
C. L. ANDERSSON & CO.,
Incorporated Accountants,
Auditors.

Johannesburg, 17th April, 1923.

Dr. REVENUE AND EXPENDITURE for the Year ended 31st December, 1922 Cr.

Dr.		
To Salaries (Johannesburg and Pretoria)	£8,470 16 9	
.. Directors' Fees	1,000 0 0	
.. Audit Fees, £1,050; Less over-estimation of part-time services o/a Auckland Park Real Estate, Ltd. (in liquidation), £52 10s.	997 10 0	
.. Agents' Commission	1,286 0 6	
.. Waterkloof Township Public Services (including Water, Light, 'Buses, etc.)	5,077 16 5	
.. House Maintenance and Property Improvements	1,237 13 8	
.. Inspection and Prospecting of Properties	416 13 4	
.. London Transfer Office Expenses	973 1 6	
.. Renovations to Properties	1,022 16 1	
.. Establishment Charges (including Office Rent, Law Costs, Stationery, Printing, Advertising and Losses on Farming, etc.)	8,399 0 1	
.. Rates and Taxes, Insurance and Royalty to Government	10,254 15 7	
		£39,136 3 11
.. Balance, being Realised Profit for the year, carried to Appropriation Account		60,546 14 7
		£99,682 18 6

Cr.	
By Profits realised on Stocks and Shares, Dividends, Rents, Licences, Sales of Properties and Sundry Receipts	£99,682 18 6
	£99,682 18 6

South African Townships, Mining and Finance Corporation, Limited

(Incorporated in the Transvaal).

APPROPRIATION ACCOUNT.

Dr.			Cr.	
To Estimated Income Tax for Income Tax Year 1922 ...	[illegible]		By Balance from Appropriation Account at 31st December, 1921 ...	[illegible]
Less Adjustment on United Kingdom Income Tax [illegible]	[illegible]		[illegible] Expenditure Account for the year ended 31st December, 1922 ...	[illegible]
[illegible]		[illegible]		
[illegible]		[illegible]		
		[illegible]		£269,121 [illegible]

W. F. DRUMMOND, Secretary.

Examined and found correct.

O. F. BROTHERTON,
C. L. ANDERSSON & CO.,
Incorporated Accountants,
Auditors.

Johannesburg,
17th April, 1923.

……

[illegible] to the Committee of the Stock Exchange [illegible]

A copy of this Prospectus has been lodged with the Registrar of Companies [illegible] in accordance with Section [illegible] of the Companies Act, 1909.

ABRIDGED PROSPECTUS OF THE

Batavia (Rustenburg) Gold Reefs Exploration Company, Limited

To be reg'stered under the Limited Liability Laws of the Transvaal.

CAPITAL - - - - - £50,000

Divided into 50,000 (Fifty Thousand) Ordinary Shares of the nominal value of £1 (One Pound) Sterling each, all of one class and all equal in every respect

WORKING CAPITAL	**30,000 Shares.**
VENDORS	**15,000 Shares.**
WORKING CAPITAL IN RESERVE	**5,000 Shares.**
	50,000 Shares.

Save for the above 15,000 fully paid up Vendors Shares no Shares nor Debentures have been issued or agreed to be issued, as fully or partly paid up, otherwise than in cash, and no amount has been paid or intended to be paid to any Promoter.

DIRECTORS:

The first three Directors shall be :-

HORATIO GAMBLE, Esq., Director of Companies, 1-2-3 Exploration Buildings, Commissioner Street, Johannesburg.

PATRICK MACDONALD, Esq., Manager, [illegible] Exploration Buildings, Commissioner Street, Johannesburg.

EDWARD JACOBS, Esq., Manager, [illegible] Buildings, Main Street, Johannesburg.

Two further Directors will be appointed by Shareholders at the Statutory Meeting of the Company. The qualification of a Director in terms of the Articles of Association shall be the holding in his own right of 100 Shares of the nominal value of £1 each. The Directors' remuneration as provided by the Articles is £2 2s. per meeting for each Director, and such further remuneration as may be voted by the Shareholders.

BANKERS:

THE STANDARD BANK OF SOUTH AFRICA LIMITED, Fox Street, Johannesburg.

SOLICITORS:

PERCY C. CHIVERS, Esq., 8-10 [illegible] Buildings, Fox Street, Johannesburg.

SECRETARY AND OFFICES:

MALDWYN EDMUND, Esq., 87-91 Exploration Buildings, Commissioner Street, Johannesburg.

AUDITOR:

GEORGE MACKENZIE, Esq., 45 Standard Bank Chambers, Commissioner Street, Johannesburg.

WORKING CAPITAL:

30,000 WORKING CAPITAL SHARES are now offered for subscription at par, and applications thereto will be received at the Head Office of the Company, 87-91 Exploration Buildings, Commissioner Street, Johannesburg, up to 30th June, 1923. The Directors reserve the right to close the list so soon as the Working Capital now required has been fully subscribed.

TERMS OF PAYMENT.—10/- per Share on application, 5/- on 31st August, 1923, and 5/- on 31st October, 1923. Any increase of Capital at any time authorised for subscription will in the first instance be offered to registered Shareholders pro rata to their holding.

ALLOTMENT.—All the Working Capital Shares will be allotted strictly according to priority of the receipt of the applications, subject to the right of the Directors, as above set forth, to close the list so soon as the Working Capital now asked for has been fully subscribed.

MAIN OBJECTS OF THE COMPANY:

The principal objects of the Company are :—

(a) To take over and acquire from the Vendors their right to prospect and develop the 78 Discoverer's Claims on the Proclaimed Farm Batavia No. 858, and the 78 Discoverer's Claims on the Proclaimed Farm Kameelboom No. 857, District Rustenburg, with a view to forming and registering a Subsidiary Company to purchase and work such Claims.

(b) To take over and acquire from the Vendors on the Farm Batavia, four further Claims pegged for the purpose of linking up the Discoverer's Claims on Batavia with the Batavia Reefs on the adjoining Farm Portugal No. 854, to enable mining operations to be carried on jointly on both properties.

(c) To acquire from the Vendors their right and option over the Mineral Rights on the Farm Portugal No. 854, contiguous to Batavia No. 858, in extent 2,062 morgen, in which area is included 562 morgen to be acquired in freehold.

(d) To develop the abovementioned properties by means of Shafts, Adits, Drives and other prospecting and development operations, with a view to bringing them to the stage enabling a Mining Company with sufficient working capital to be floated to purchase the Discoverer's and other claims referred to on Batavia and Kameelboom, and the Mineral Rights and Freehold of Portugal, and to work and turn such properties to account.

Negotiations are, moreover, at present proceeding for the acquisition of certain further prospecting and mining rights over other properties in the neighbourhood of Batavia and Portugal, and such rights, if acquired, will be transferred to this Company without any further remuneration to the Vendors.

The Vendor's Agreement with the Owners of the Discoverer's Claims on Batavia and Kameelboom, containing the terms of purchase of such Claims and the terms of purchase of the Mineral Rights and Freehold on Portugal, as well as the Vendor's Agreement with the Company, may be seen at the Head Office of the Company, at any time during business hours.

The Vendor is Horatio Gamble, of 132/3 Exploration Buildings, Commissioner Street, Johannesburg, and as Vendor is acting on behalf of a partnership consisting of himself, the said Patrick Macdonald and Edward Jacobs, and ten other persons all jointly interested with him, and carrying on business as Rustenburg Gold Reefs Syndicate.

Under the Vendor's Agreement with this Company dated the 28th day of May, 1923, the Vendor has sold for 15,000 Shares in this Company as full payment thereof, the said four claims on Batavia, and all the Vendor's right, title and interest in and to a certain Notarial Contract dated 17th May, 1923, by which the Owners of the aforesaid Discoverer's Claims on Batavia and Kameelboom, and the holders of an option to purchase the Mineral Rights of Portugal, in extent 2,062 morgen, in which is included the freehold of 562 morgen of Portugal, undertake to sell the said Claims and the option to purchase the Mineral Rights of Portugal and 562 morgen of Portugal to a Company to be formed.

Details showing the basis of flotation of such proposed Company appear from the full prospectus, which may be obtained at the Office of the Company, and at the principal branches of the Standard Bank of S.A., Ltd., during business hours.

Vendor's Interest. The three abovenamed Directors, Horatio Gamble, Patrick MacDonald and Edward Jacobs are all interested in the Vendor's Rights, which are being acquired by this Company, in that they are all members of the partnership already referred to, which has secured such Vendor's Rights and the four claims on Batavia in the name of Horatio Gamble.

The Memorandum of Association setting forth the objects of the Company is to be seen at the Offices of the Company, and forms a part of this Prospectus.

Reports.—The following are extracts from the Reports by Mr. Theo. Kassner, F.R.G.S., Consulting Geologist, and by Mr. W. H. Jones, B.Sc., M.E., M.I.M.E.

Extracts from Mr. Theo. Kassner's Report, dated 17th May, 1923:—

Reef Occurrence.—This gold-bearing body consists of a well-defined conglomerate reef, with quartzite strata on the hanging wall and shales on the footwall, dipping about 35 degrees to the south. It is accompanied by a series of gritty seams, which probably change into conglomerate in places, bringing the confusion of the gold carrier. The reef seems to be composed of a footwall leader, middle reef and hanging wall leader, and in some places there is the possibility that they separate from each other and branch out, which is the reason that the outcrop appears in very small widths or rusty seams, and extremely difficult to discern; but, according to experience, it seems to attain its concentrated form in depth, which is corroborated in various exposures on Batavia.

My testing of this reef body gave the following results:—

Main working reef well exposed. Clay seam of decomposed pebbles, 4in. on shale footwall, 10 dwts.; footwall leader, 5in. overlying, 42 dwts.; middle section of reef, 9in., 46 dwts.; hanging wall leader, 5in., 52 dwts.; total, 23in. wide, average 45 dwts.

Sample of North Leader: Cutting No. 1 leader, 4in. wide, 11 dwts.; cutting No. 2 leader, 4in. wide, 91 dwts.

Conclusion.—I have followed the development of the gold occurrence on Batavia and Kameelboom with great interest, as I believe that through persistent work in pursuance of this reef line, a most interesting discovery on its strike and depth will be made. The encouraging results I obtained on my various visits point to no baseless venture, but to one which will bring reward and success if taken up in [illegible]

Extracts from Mr. W. H. Jones's Report, dated 1st May, 1923:—

The properties, Batavia and Kameelboom, have each 78 claims pegged, plus an additional four link-up claims on Batavia pegged by the Company.

Recent sampling of the ore bodies has disclosed some areas of very high values. One such sample over a reef width of 16 inches gave on assay (Heymann & Co.) 41 dwts. over a stoping width of 30 inches. This must not be taken as an average value for the reef, but only as indicating the presence of high grade ore on the property.

It may be taken that the values already known range from 12 dwts. to over 300 dwts. over the reef width.

This property being an outcrop proposition, it follows that the whole of the area can be proved and brought to the producing stage within a short period with comparatively small working capital as compared with the time and money required to open up deep level propositions.

The problem of fuel has been solved by the discovery of coal at a reasonable distance from the property.

Water is plentiful at moderate depths below the surface, and there is a second source of supply in the Marico River about seven miles away.

Samples assayed by Sydney Bilborough & Co.: Batavia sample gold (reef and waste together), 10·3 dwts. per ton. Batavia sample gold on same reef assayed by Government assayer, 10·3 dwts. per ton.

Samples assayed by Littlejohn & Whitby: Batavia sample gold, South Reef, 34·4 dwts. per ton; Batavia sample gold, North Reef, 69·0 dwts. per ton; Batavia sample gold, North Reef at 12ft. down, 308·2 dwts. per ton; Batavia (reef and waste), gold, South Reef, 20ft. down, 28·4 dwts. per ton; Batavia (reef and waste) Gold, South Reef, 18ft. down, 4·8 dwts. per ton; Batavia Gold, North Reef, 132·6 dwts. per ton.

The originals of the above Reports may be seen on application at the Company's Offices during business hours.

General. The Vendors are showing their confidence in the properties by taking the whole of their interest in shares, notwithstanding that they have already disbursed a large amount of money to acquire the rights and in carrying on prospecting and development operations on these properties.

Particular attention is directed to the fact that the properties over which this Company is acquiring rights contain outcrop reefs as shown in the Reports, and consequently the properties can be developed, proved and brought to the producing stage in a much shorter time and with considerably less outlay than would be the case on deep level propositions.

Preliminary Expenses. The estimated preliminary expenses amount to £750, which will have to be refunded by this Company. This Company will pay to recognised Agents or Brokers in respect of allotments made upon Application Forms bearing their stamp or signature, a commission at the rate of Ten per centum (10%).

Minimum Subscription. The minimum subscription on which the Directors will proceed to allotment has been fixed at 22,500 Working Capital Shares, being Seventy-five Per Cent. of the whole amount of the Share Capital offered for subscription.

HORATIO GAMBLE.
PATRICK MACDONALD.
EDWARD JACOBS.

Dated at Johannesburg, the 28th day of May, 1923.

This Form may be used.

Batavia (Rustenburg) Gold Reefs Exploration Co., Ltd.

(To be Registered under the Limited Liability Laws of the Transvaal.)

APPLICATION FOR SHARES.

To the Directors of
BATAVIA (RUSTENBERG) GOLD REEFS EXPLORATION COMPANY, LIMITED,
P.O. Box 1551, Johannesburg.

I hereby apply for and request you to allot to me Shares in the above Company, for which I enclose cheque for £ being **10/-** per Share payable on application, and I agree to accept the same or any less number you may allot me in terms of the Prospectus of the above Company, and I hereby authorise you to place my name on the Register of the Company in respect of the Shares so allotted to me.

Dated at the day
of , 1923

Please write distinctly

Signature

Name in full

Address

Occupation

The above application may be handed in at any Branch of the Standard Bank of S.A., Ltd., or may be forwarded direct to the Head Office of the Company, 87/31 Exploration Buildings (P.O. Box 1551), Johannesburg.

Applications for Shares must reach the Head Office of the Company not later than SATURDAY, 30th JUNE, 1923.

Leeuwpoort (African Farms) Tin Mines, Ltd.

(Incorporated in the Transvaal).

CAPITAL - - - - £275,000

In 275,000 Shares of £1 each.

DIRECTORATE:

SIR JULIUS JEPPE, KT., C.B.E. (Chairman). E. M. HIND, A. G. GILL, W. J. GAU, B. SOUTHWELL.

Extracted from the Report for the year ended 31st December, 1922.

PROPERTY.

The Property of your Company consists of:—

(a) Freehold Farm Leeuwpoort No. 2415, Waterberg, of an area of 3,962 morgen 255 square roods, being the entire farm.

(b) Mineral rights over portion, 1,099 morgen 84 square roods, of the Farm Rietfontein No. 2414, Waterberg, adjoining Leeuwpoort.

FINANCIAL.

	£	s.	d.
Working Revenue and Expenditure Account shows a loss for the year ended 31st December, 1922, of . . .	£10,387	13	2
Plus Interest and Bad Debts provision	6,815	19	7
	£17,203	12	9
Less Rents and Profit on Sale of Shares	271	15	9
Carried to Balance Sheet	£16,931	17	0

DEVELOPMENT AND ORE RESERVES.

No development or exploratory work of any kind was done during the year.

The estimate of mining tons of ore developed, exposed and at grass at 31st December, 1922, is:—

	Short Tons.	Value. Metallic Tin.
Total ore developed, etc.	66,475	2.4%
Total ore at grass	2,057	1.14%
	68,532	2.35%

A comparison with the previous year's figures shows a decrease of 2,282 mining tons without alteration in value.

This decrease was due to the complete cessation of development work. It was found expedient to obtain about 1,400 tons from the South Spruit Extension Workings, and some 900 tons from ore at grass, at a period when the H.G. workings were unsafe at the beginning of the year owing to rain.

MILLING AND CONCENTRATING.

Mill ran: 17 Stamps (2 Nissen and 15 Californian), 24 hours basis	123 days
Concentrating Plant ran	132.8 days
Ore milled	17,784 short tons
Tons milled per diem ran	114.58 short tons
Duty per stamp per diem	8.50 short tons
Concentrates won	229 long tons
Average grade of concentrates produced	59.51% Met. Tin
Average grade of ore treated (approx.)	1.2% Met. Tin

Included in the 229 long tons of concentrates produced are 6.6 long tons of concentrates obtained from the treatment of 530 short tons of Vanner Tails at the beginning of the year.

The full Report and Accounts may be obtained from the Secretaries, South African Townships, Mining and Finance Corporation, Limited, Clewer House, Simmonds Street, Johannesburg (P.O. Box 5036).

The **FRANÇOIS**
CEMENTATION PROCESS

The Surest and Most Economical Method of overcoming difficulties due to the presence of water or bad ground.
The Safest and Most Successful Shaft Sinking Process.

DRY SHAFT SINKING AND DRIFTING THROUGH **WET** GROUND.
WET SHAFTS, DRIFTS, AND TUNNELS, MADE **DRY.**
BAD GROUND CONSOLIDATED AND SECURED.
FOUNDATIONS SECURED AND STRENGTHENED.
UNDERGROUND DAMS INSTALLED.
LEAKAGES SEALED OFF.
GOB FIRES QUENCHED.
DIAMOND DRILLING.
Etc., Etc.
ORIGINAL CONSTRUCTION AND REPAIRS.

Bring your troubles to experts. Consult us in any difficulty, due to the presence of water or bad ground.
WE CAN SAVE YOU MONEY. — **PLANT AND FOREMEN ALWAYS AVAILABLE.**

THE FRANCOIS CEMENTATION CO., Ltd. — BENTLEY WORKS, — DONCASTER, ENGLAND.
SHAFT SINKING CONTRACTORS, CONSULTING ENGINEERS, CEMENTATION SPECIALISTS.

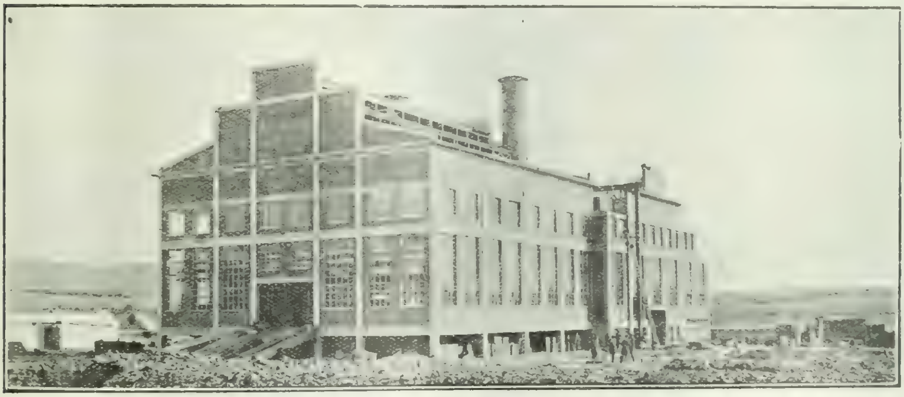
South African Manager: Dr. G. A. VOSKULE, 31/9, Meischke's Buildings, Harrison Street, JOHANNESBURG.

Anglo-American Meetings—Delagoa Bay Coaling Plant—
S.A. Railway Electrification.

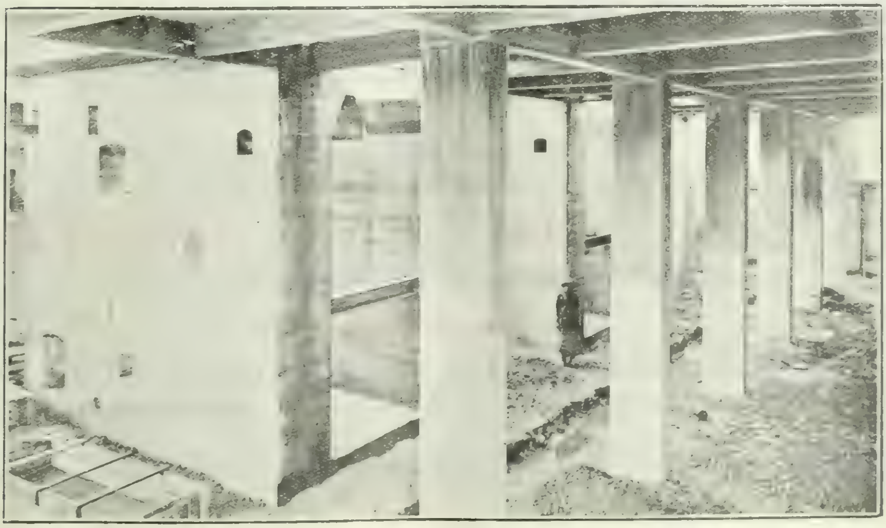
The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JUNE 16, 1923. No. 1655.

New Municipal Power Station, Pretoria.



Exterior of the New Power Station, Pretoria.



Foundations of Engine Room, Power Station, Pretoria. Consulting Engineers, Messrs. Clark & Partner.

The Largest Gyratory Crusher
Made in Great Britain.

Weight: 80 tons, Height: 17ft. 2in.
WAS BUILT BY
EDGAR ALLEN & CO., LIMITED
Imperial Steel Works, Sheffield.

Head Office for South Africa:
EDGAR ALLEN & CO. (South Africa), LTD.,
3 and 4, New Club Buildings (P.O. Box 551), JOHANNESBURG.

Anglo-American Corporation.

SIR ERNEST OPPENHEIMER'S REVIEW—THE QUESTION OF TAXATION.

The annual meeting of the Anglo-American Corporation of South Africa, Ltd., was held in the Board Room of the Corner House, Johannesburg, on June 9, Sir Ernest Oppenheimer (the chairman of the Corporation) presiding. In moving the adoption of the directors' report and accounts the Chairman said: I must preface my remarks by expressing my regret that I was unable to be present at our last annual meeting. I was obliged to proceed to England on business of the Corporation which could not admit of my departure being delayed until after the meeting. During my visit to England I was able to bring to a successful conclusion the negotiations which had been proceeding for some time with the Consolidated Mines Selection Company for the acquisition of that company's South African assets and also for the transfer to this Corporation of the administration of the affairs of the various companies previously known as the Consolidated Mines Selection Group. From the inception of the Anglo-American Corporation of South Africa it has been my earnest purpose to establish a big South African financial house which would play a progressively useful part in the development of the industries of this great country. In the pursuance of that aim your Corporation first acquired over 560,000 shares out of the total capital of 600,000 shares in the Rand Selection Corporation, and we have now purchased the South African assets of the Consolidated Mines Selection Company. This transaction could never have been consummated but for the goodwill of the Consolidated Mines Selection Company and the confidence which, I am proud to say, their directors have shown in me as chairman of this Corporation. I am indeed pleased that so many of the directors of the Consolidated Mines Selection Company have joined our board and thus assured us of the continuity of that goodwill and friendly intercourse which has characterised all the dealings between the two companies. We heartily welcome these gentlemen and are glad to have their advice and assistance in carrying out the policy which they so successfully inaugurated. The consideration payable by us for the South African assets of the Consolidated Mines Selection Company was £212,046 in cash and 521,125 shares in this Corporation.

Transfer to Johannesburg

In accepting responsibility for the administration of the affairs of the subsidiary companies we were fortunate in being able to secure the transfer to us of the whole of the Johannesburg and London technical and clerical staffs. One of the chief considerations which made it possible to found the Anglo-American Corporation as a South African house and one of the strongest points I was able to urge in support of our proposal to purchase the South African assets of the Consolidated Mines Selection Company, was the fact that here in South Africa the profits of the mines were taxed only by the Union Government at the source, and, further, that the Union Government taxed only income which was derived from a source within the Union. Shareholders living in countries outside of South Africa could, therefore, rest assured that there was nothing to hinder or prevent a company registered in South Africa from undertaking new business in any part of the world, and that any profits accruing from such ventures would not be subject to double taxation. Since the success of our efforts in these directions a number of proposals have been submitted to the House of Assembly with the object of throwing new burdens on the mining industry. One proposal went to the length of confiscating a very large part of the claim licences which are payable to freehold owners as part consideration for the losses inflicted upon them by the proclamation of their farms. In addition to these proposals in the Union House of Assembly, the provincial authorities have considered suggestions which, if adopted, would make financial companies subject to provincial imposts, in addition to the taxation levied by the Union Government. As the argument which seems to be most in favour in the Provincial Council are that we pay no direct taxation, I should like to say that this is merely due to the fact that the policy of the Union and South-West Governments has always been to collect taxation at the source. Our concern over these matters will be better appreciated when I mention that although 1922 was a bad year from the profit-earning point of view, the gold mining, diamond mining, and finance companies in which this Corporation is so largely interested were called upon to contribute in direct taxes a sum of over £500,000, while the Government participation in the profits of Brakpan Mines and Springs Mines, under the provisions of the Mineral Lease Agreements, exceeded [illegible].

"Still Below Normal."

This year, although conditions are still below normal, the contributions of these same companies are estimated at a sum exceeding £800,000. I do hope that these clouds will pass by, and that neither the Union Government nor the Provincial Council will levy taxation which would have the effect of upsetting the basis on which our Corporation was established under the South African Company Laws and on which it has developed its very extensive interests in South Africa. It is only by maintaining such a basis that we can keep faith with our friends on the other side of the water and continue to attract new capital to South Africa. It is quite true that up to the present our resources have been employed chiefly in connection with gold and diamond mining. Our articles of association, however, give us extremely wide powers, and it does not follow at all that our activities will always be limited to mining. We are free to assist in the development of any other encouraging enterprise; indeed it is our hope and our intention, as I have already said, to take an active part in the industrial development of South Africa. For the time being, however, our interests are centred in the mining industry, and anything that is done to harm that industry will make it more difficult for us to prove that these are profitable investments in South Africa, and will tend to close the avenues by which we

Sir Ernest Oppenheimer,
Chairman of the Anglo-American Corporation, Ltd.

[illegible] the development of the country in other directions. The Anglo-American Corporation might do well to adopt the motto of the late Transvaal President: "[illegible]." That was the underlying principle of our amalgamation with the Consolidated Mines Selection Company, and we are desirous that, for the present, our resources shall be utilised chiefly in the mining industry and in investments limited to purely African enterprises.

Important Amalgamation.

Whilst in England last year I also completed an arrangement by which your Corporation joined with Messrs. Barnato Bros. in acquiring an interest in the Companhia de Diamantes de Angola. I have seen that co-operation between all the important diamond producing interests, which must be made to include the Angola Company, is in the interests of the diamond trade. The transaction referred to is simply the extension of our general policy to strengthen and maintain the position we occupy amongst the diamond producers of Africa. I have joined the board of the Angola Company as your representative, and am confident that the extensive knowledge and experience of diamond production and the sale of diamonds which is at the command of the Anglo-American Corporation will be of great benefit to the Angola Company. As far as we are concerned, we shall do all we can to assist them in the profitable and economic exploitation of their fields. The companies in which we are principally interested are enumerated in the directors' report, and the annual meetings of most of them have been held within the past few days. Any shareholder who wishes to make himself conversant with the affairs of any or all of these companies will be supplied with a copy of the published reports and accounts, and also the report of the proceedings at the annual meetings, upon application to the secretary of the Corporation here, the secretary of the London Agency or the secretary of the New York Committee. I propose, as in past years, to refer briefly to the more important features in the operations of these concerns.

Consolidated Diamond Mines of South-West Africa, Ltd. —During the year the Anglo-American Corporation considerably increased its interest in this company. The annual meeting of the Consolidated Diamond Company was held in Capetown on May 21 last. It is not surprising, in view of the unprecedented period of depression in the diamond trade which the company had to face within so short a period of its inception, that no dividend could be declared, but the position put before shareholders was satisfactory. From an examination of the annual reports and accounts and the remarks made at the annual meeting it is clear that the intrinsic position of the company has materially improved, and that instead of having practically no cash working capital, as was the case when the company was inaugurated, it now has approximately three-quarters of a million sterling cash in various funds. This sum is equivalent to 5s. 6d. per share on the issued capital, or 3s. 3d. per share on the enlarged capital which will result if the debentures are converted into shares. Owing to the terms of the debenture trust deed, and to the yearly provision which is made for redemption, this amount will be automatically increased until it amounts to £1,810,000. If the debentures are exchanged for shares the whole of the redemption fund will be available for distribution to shareholders.

Diamond Mining Areas.

All the company's titles to its mining fields and landed property have now been completed and registered, and the area of its diamond mining rights exceeds 10,000 square miles. During the existence of the company, its diamond reserve has been increased by approximately 700,000 carats, so that it is in the gratifying position of having maintained its original diamond reserve, and at the same time established a strong cash position. Being so familiar with the diamond trade, I am able to appreciate and endorse fully the policy of the directors of the Consolidated Diamond Company in building up a cash reserve sufficient to meet every contingency. This policy has been proved, by lengthy experience, the only sound one for a diamond company. The sales by the company, which are detailed in their reports and accounts, confirm the improvement which took place in the diamond market during 1922. This improvement has, I am glad to say, been fully maintained during this year, and the prospects for the future are favourable.

After the Chairman briefly reviewed the position of the subsidiary companies, the annual general meetings of which were held on June 8, he went on to deal with the Transvaal [illegible], Ltd., and other matters. Owing to the present unsatisfactory state of the coal trade, he said, no steps have yet been taken to commence active mining operations on the extensive fields of the [illegible] Coal Corporation. As soon as trade conditions justify such a course the company will be placed upon a revenue-earning basis. We can do but little, however, until the Union Government comes to our assistance by providing a railway line, so that the coal can be marketed. The company will eventually provide employment for a considerable number of white men, and will assist the revenue of the country, but its property must lie idle until conditions in the coal trade improve and a means of cheap transport is provided.

Financial.

If you will now turn to the profit and loss account, it will be seen that the revenue for the year amounted to £535,073 and that, after providing for all expenses, the balance carried to the appropriation account was £325,208. This sum, added to the £177,953 brought forward from the last account and the amount of £65,000 previously appropriated to meet contingencies, but not required and therefore now written back, gave us, at the end of the year, unappropriated profits totalling £568,589. The balance sheet shows that the issued capital of the Corporation was increased during the year by 524,425 shares of £1 each, and now stands at £3,718,453. The whole of the 524,425 new shares went to the Consolidated Mines Selection as part payment for that company's South African assets. Since the end of the year we have purchased from the Custodian of Enemy Property 51,931 shares at 20s. per share. On the credit side of the balance sheet, shares and investments stand at £3,703,086, as compared with £3,244,936 at the end of 1921. In passing, I may mention that the market valuation of our securities showed at the end of the year a substantial excess over the sum at which they stood in the books, while I need not remind you that market prices of most of the stocks in which we are interested are better now than they were at December 31.

Cash Assets.

Cash assets amounted to £1,720,567, made up of advances to affiliated companies £214,145, sundry debtors and dividends receivable (since paid) £189,282, bills receivable (since paid) £97,200, and loans and cash £1,219,940. Cash liabilities amounted to £1,142,306, and include sundry creditors £275,245 and deposits by affiliated companies £866,908. At the end of 1922, therefore, our cash assets exceeded our liabilities by £578,262. At the moment our liquid resources are considerably greater than they were at the end of the year, and as our present engagements on account of shares to be taken up do not exceed £200,000, it will be seen that we are in a particularly strong position to undertake any new business. Incidentally, I would add that of our investments nearly one-third consist of debentures carrying a high rate of interest and giving a large measure of security. Early this year your directors announced a dividend of 7½ per cent., based on the profits for the year 1922, the payment of which absorbed £278,884. With regard to future dividend distributions, it is our intention to declare only one dividend a year, as that has been proved in practice to be the soundest course for a financial house to follow. Apart from the desirability of arriving at a reasonably close estimate of revenue from all sources, which cannot be done until towards the end of the year, it is impossible for a company whose principal interests consist of shares which are subject to daily fluctuation to determine the amount of profit available for distribution until a valuation of its assets is made. We propose, therefore, to announce the dividend which will be paid in respect of the past year's operations as early as possible in January, and payment of the dividend will follow as expeditiously as possible. For the year 1923 our profits so far are substantially better than those for the corresponding period of last year, and as the outlook for the next six months is very promising, we have every confidence that the results for the year will be satisfactory.

Labour Conditions.

At our last meeting I referred at some length to labour conditions on the Witwatersrand goldfields. Since then the Government has published the report of the Mining Industry Board, which was appointed to inquire into the causes of the prolonged strike which took place in the early part of 1922. The Commissioners dealt with their subject in a most thorough and exhaustive way, and their report shows how just the industry was in the attitude it adopted towards labour. In the course of its sittings, the Board put forward a conciliation scheme with the object of preventing a repetition of industrial conflicts such as those recently experienced. This scheme was agreed to by the employers and the workmen's organisations, and a Bill to give it legislative effect was brought before Parliament at the beginning of the present session. The Bill was remitted to a Select Committee, and the form in which it emerged from that Committee has caused a good deal of surprise, as the amendments to the original Bill are, in several important respects, diametrically opposed to the recommendations of the Mining Industry Board, and, if adopted, would have the effect of seriously weakening the authority of the management in maintaining discipline. I hope, however, that Parliament will not adopt the measure in its present form and that the Bill finally adopted will give effect to the conciliation procedure recommended by the Mining Industry Board. There can be no doubt that a measure framed on those lines will operate successfully in the prevention of strikes, provided both sides act in a spirit of goodwill and mutual respect. What the mining industry sadly needs is a prolonged period of industrial peace in which both employers and employed can retrieve the disastrous losses they have suffered, and this can only be attained by the maintenance of good relationship between the mine managements and the workmen, and the promotion of increased efficiency all round. Disputes and grievances are bound to arise from time to time, but if they are properly handled they should not disturb the general harmony.

Efficiency of the Workers.

Following the better understanding inspired by the frank and free discussions before the Mining Industry Board, there had been during the past nine or ten months a steady and progressive improvement in the efficiency of the workers on the Rand. This is attributable to the restoration of managerial authority, the reorganisation of underground work, and the willing spirit shown by European employées generally, which resulted in greater energy being displayed by the native labourers. The increased efficiency is the principal factor in the reduction of working costs and the consequent greater tonnage of ore which now comes within the limits of payability—influences which must operate to the ultimate benefit of all concerned in the industry. At the moment the industrial outlook is clearer than it has been for a long time, but there is still some uneasiness in the minds of South African and European investors as to taxation proposals. There can be no question of the desirability of attracting new capital to this country, and I submit that the Government should give the national industries of gold and diamond mining reasonable immunity from the constant and irritating threats of new imposts, and definitely reserve to itself the sole power of levying taxation in any form upon mining and the profits arising therefrom. I read with great interest in to-day's paper the intentions of the Government with regard to the Bills at present before the House. Amongst those which it has been resolved to hold over until next session are several of vital impoitance to the mining industry. This decision will afford the public adequate opportunity of subjecting these measures to careful scrutiny before they again come up for discussion. It will also, I trust, allay the uneasiness that has been caused through the fear that the important matters dealt with in these Bills were being settled without sufficient investigation, and thus stop the efflux of capital from a country where it is so urgently needed. I believe the settlement, on well considered lines, of the questions involved in these legislative affairs will go a long way toward the restoration of confidence in South Africa as a country offering attractive mining investments. In conclusion, I desire to express our thanks to the secretarial and technical staffs in Johannesburg, London and New York for their loyal and efficient services to the Corporation during the year. Special credit it due to our engineering department—of which Mr. Carl Davis is in charge, ably assisted by Mr. S. E. T. Ewing, Mr. J. L. Willey, and the technical staff associated with them—for the skill with which they have supervised the important interests entrusted to them. I now beg to move that the directors' report, balance sheet and accounts, as presented, be and they are hereby approved and adopted.

Mr. Walter Hudson seconded the adoption of the report and accounts, the motion being carried unanimously.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 29.—Durban Roodepoort Deep, Ltd. (s), 10 a.m.

July 4th.—New Eland Diamonds, Ltd. (a), 11 a.m.; special meeting immediately afterwards.

July 19.—Transvaal Consolidated Lands (s), 12 noon.

August 10.—Transvaal Consolidated Lands (s), 12 noon.

Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

The Chemist and Industry.

Stellenbosch University paid a compliment to Kimberley, to the Diamond Industry and to De Beers Consolidated Mines, Ltd., last week, in asking Sir David Harris to perform the ceremony of opening the new chemical laboratory, the construction and equipment of which have been rendered possible mainly by the munificent gift by De Beers to the University, a gift of £25,000, a condition of which was that it should be applied to the production of South African chemists. In agriculture, mining, and in industries generally chemistry plays an important part, especially in mining and agriculture. Without dynamite, agriculture and mining would have advanced little or nothing in the past half a century. Dynamite has made intensive agriculture and deep level mining a comparatively simple proposition. Its potentialities for good are unquestionable. Sir David Harris preferred to dwell upon the virtues of explosives in building up and to deprecate its uses if they were not to "alleviate human suffering, mitigate disease and increase the comfort and happiness of mankind." His wish, fervently expressed, that the leading chemists of the world universally condemn the uses of poison gas, liquid fire, and all diabolical methods of modern warfare, would, in their realisation, go far to bring about that state in which war, if not impossible, would be shorn of its untold suffering. His tribute, therefore, to those illustrious chemists who have toiled in the laboratories and whose names have been handed down through the ages as discoverers and inventors, men of great achievement, is all the more generous and genuine. Without their discoveries and their inventions it would not have been possible for South Africa to look back upon a half-century's production in minerals valued at a thousand millions sterling.

Brakpan Mines, Limited.

INCREASE OF CAPITAL QUESTION OF GOVERNMENT PERCENTAGE—DEVELOPMENT RESULTS.

The annual general meeting of the Brakpan Mining Co., Ltd., was held in the Corner House on June 8. Mr. [illegible] Lynch, who presided, said: Gentlemen,—A few days ago an extraordinary general meeting of shareholders was held for the purpose of considering a proposal to increase the capital of the company from £850,000 to £1,020,000 by the creation of 170,000 new shares, which will rank for the dividend to be declared as at June 30.

The reasons which actuated your directors in recommending this increase of capital were fully explained at that meeting, and it is unnecessary for me to traverse the same ground again to-day. The proposal was unanimously approved of, and the new shares will be offered to shareholders registered in the books of the company on May 31 last, pro rata to their shareholdings, at the price of 30s. per share.

The necessary application forms, with letters of renunciation attached thereto, have been forwarded to all shareholders, and applications will be received up to the closing of business on June 25. The issue was guaranteed by the Anglo American Corporation of South Africa, Ltd., free of commission.

No change took place in your company's property holdings during 1922, but since the close of the year the Schapenrust claims royalty has been commuted, and part of the proceeds of the new shares will be used for that purpose.

Owing to the industrial upheaval, which resulted in the practical cessation of mining operations for the first three months of the year, a general comparison of the results for 1922 with those of 1921 would be of no value. It was not until the second half of the year that working conditions on the mine again approached the normal, and I propose as far as possible to limit myself to that period in the comparisons which I shall draw in reviewing the year's operations.

Increased Tonnage Crushed.

The main features of the work of the second half of 1922 were the increased tonnage crushed, the improvement in the revenue per ton milled, and the working profit on the basis of the standard value of gold, whilst there was a very considerable reduction in working costs and a heavy fall in the amount of revenue received from premium on gold.

The tonnage milled during 1921 amounted in all to 659,800 tons, and in the last six months of 1922 to 376,700 tons. If we assume, for purposes of comparison, that the tonnage milled in the first half of the year had been equal to that treated in the second half, the total of 753,400 tons would represent an increase of 93,600 tons for the year.

The standard working profit for the whole of 1921 was £224,907, and the relative figure for the last six months of 1922 was £272,141—a greater sum for the half year than was realised for the whole of the previous year.

The amount received by way of premium on gold was affected by the cessation of work due to the strike, as well as by the fall in the price of gold, and a comparison of the figures for each year shows that in 1921 we received £265,339, and in 1922 only £69,596, or a reduction in revenue for the year of nearly £200,000.

The yield of the ore treated improved from 34s. 0·17d. per ton in 1921 to 36s. 4·97d. per ton for the second half of 1922. The working costs show a reduction for the same periods from 27s. 2·36d. to 21s. 11·59d., and the profit per ton milled improved from 6s. 9·81d. to 14s. 5·38d.

Willing Spirit of Workmen.

I think these comparisons show quite clearly the effect of the improved economic conditions which succeeded the resumption of operations after the strike. The control of the mine management became more effective, better methods of organisation were introduced, and a more willing spirit was displayed by the European workmen, which immediately resulted in more energy being exerted by the native labourer and greater efficiency all round.

Working costs were further influenced by the more economic use of mine stores, the modification of the contract system, and the removal of redundant men. The figures are shown in detail in the report of your consulting engineer, which is attached to the directors' report, and are well worthy of study by those shareholders who are interested in the detailed results of operations at the mine.

The development footage accomplished during 1922 totalled 15,381 feet, and of this 11,378 feet was completed during the last six months of the year. The figure for the year is 6,150 feet less than the relative total for 1921. With so great a reduction in the footage, one would rather have expected a contraction in the ore reserve.

Fortunately, however, owing principally to the higher percentage of payable footage developed, the result of the re-calculation of the reserve at the end of the year showed a small increase of 26,050 tons, while the stope width was increased by 1·87 inches and the value was decreased by ·38 of a dwt. The net result is reflected in the inch-dwts. figure by a reduction of eleven.

Actual Figures.

The actual figures were as follows:—

As at December 31, 1921: Tonnage, 2,423,230. Stope width, 68·13 inches. Value, 8·61 dwts., equal to 587 inch-dwts.

As at December 31, 1922: Tonnage, 2,459,280. Stope width, 70·0 inches. Value, 8·23 dwts., equal to 576 inch-dwts.

The payable footage for the year was 5,025 feet, which is equivalent to 54·1 per cent. of the footage sampled. The average value was 13·29 dwts. and the average width 45·4 inches, equal to 603 inch-dwts., as compared with 5,425 feet, equivalent to 41·2 per cent. of the footage sampled, giving an average value of 15·21 dwts. over 38·86 inches, or 591 inch-dwts. for the previous year.

It will be noticed that although the inch-dwts. figure remains practically unchanged, the percentage of payability has increased by 13 per cent. and the average width of the reef channel is so much greater as to make for largely increased tonnages per claim and consequent cheaper mining costs. The great improvement in the percentage of payability compares most favourably with the average percentage of payability since the commencement of mining operations on your property, which works out at 50·9 per cent.

A reference to the plan attached to the report will show that the greater part of the payable development has been found on the eastern side of the mine, more especially during recent years. During last year, however, an ore body was encountered on the western side of the mine in the 18·1 south haulage, west of the main incline south, and between No. 2 and No. 3 shafts, which has already resulted in 25,000 tons of ore being added to the ore reserve.

Importance of Disclosure.

This disclosure is considered to be of great importance, and if the encouraging results so far obtained are continued, a new area of ground will be available for stoping which must materially improve the prospects of the mine. Needless to say, the opening up of this area is being pushed forward with all possible speed.

The development figures for the first quarter of this year, which were given in the report issued to shareholders in April last, are even better than those for last year. Of the 3,965 feet sampled, 2,280 feet, equal to 57·5 per cent., were payable, the average value being 14·38 dwts. over an average width of 47·52 inches, or 683 inch-dwts.

The tonnage milled for the quarter was slightly below the average of the second half of last year, but this was due to a loss of approximately 10,000 tons through a breakdown of the winding engine at the No. 2 shaft, and to the small number of working days in the month of February.

During the year the connection between the No. 2 and No. 3 shafts was completed. This has greatly benefited the ventilation of the mine, and will expedite the opening up of the lease area around the No. 3 shaft. In this connection I would specially invite your attention to the consulting engineer's report, in which he points out the large extent of this area and the excellent disclosures in the primary development headings.

Encouraging Results.

Those results are most encouraging, and their continuance will very materially improve the ore reserve position. It is anticipated that the connection between the No. 3 and No. 4 shafts will be effected next month. The completion of this work will further assist ventilation and should have a favourable effect on working costs.

The working profit for the year was £370,240, plus £69,596 premium on gold and £3,610 sundry revenue, making a total of £443,446. After deducting from this amount £68,964 for strike expenses, £8,497 for expenses in connection with the purchase of ex-enemy shares, and £2,549 for donations, there remains an amount of £363,436 to be added to the balance of £44,467 standing to the credit of the appropriation account, making an available total of £407,903.

This sum has been dealt with as follows:—

Appropriated for Union Government and Provincial taxation	£37,148
Government participation in profits under mineral lease	45,329
Depreciation of stores and materials	14,000
Funds appropriated for capital expenditure...	100,000
Dividend No. 21 of 20 per cent.	170,000

leaving a balance of £41,426 to be carried forward to the 1923 accounts.

The depreciation of stores and materials was necessary in order to cover the reduced value of certain stores which have now become obsolete, and other stores which were purchased during the war period when, at times, we had to buy goods which were not entirely suitable owing to the specified articles being unobtainable.

These items have now either been written off or written down to a figure which will permit of economic consumption. Over a period of years such accumulations are bound to arise, and the only satisfactory way of dealing with them is to recognise the depreciation and write it off.

Dividend Declaration.

As regards the dividend declaration, the profits earned during the first six months of the year little more than covered the expenses incurred, and the distribution of 4s. per share was in reality the net profit earned during the six months to the end of the year.

Turning now to the balance sheet, the only item which calls for explanation on the liability side is £10,654 standing to the credit of "Development Suspense Account." The fixed charge to working costs of 5s. per ton milled was not fully expended during the year, and the unused balance was therefore carried forward to 1923 and will be applied as a set-off against the current year's expenditure on development.

On the assets side it will be noticed that the item "Stores and materials in excess of standard stock" shows a considerable reduction. At the end of 1921 the account stood at £56,183, of which £44,024 was for general stores and £12,159 for construction stock. At the end of 1922 the amount invested in general stores (apart from the standard stock of £27,000) had been reduced to £3,989, and the construction stock figure stood at £6,461.

Care of Widows.

Before closing my remarks I must again refer to the unfortunate happenings at Brakpan during the strike period of last year, when four officials of the company lost their lives in the defence of the mine property.

Your directors have arranged to assist the wives and dependents of those officials by way of pension allowances, and by providing for the employment or apprenticeship of the children, so that, together with the pensions awarded by the Union Government, the widows will be cared for and the children will have a reasonable opportunity of becoming useful citizens of the Empire.

These allowances will form a charge on the funds of the company, but I am certain that shareholders will approve of the action taken by the directors. The same remarks apply to certain employees who were seriously disabled as a result of the assaults upon them. The extent of disablement is in some cases not yet definitely ascertained as the men referred to are still under treatment by their medical advisers, so that the nature of the allowances to be made has not yet been finally decided upon.

Your directors feel that such services as these gentlemen rendered must be adequately recognised, and I am sure shareholders will agree with me that to err on the side of generosity in such cases is a mistake in the right direction.

Trouble Weathered.

There is an old English saying regarding the month of March which seems peculiarly applicable to the year 1922: "It came in like a lion and went out like a lamb." At the beginning of the year we were confronted with very serious difficulties, and our anxieties were intensified day by day until the climax was reached towards the middle of March. Thereafter, although we had to encounter many squalls, they were the ordinary troubles connected with mining business, and there was a progressive improvement in the position until at the end of the year we were in smooth water.

All the influences which make for prosperity have been gradually coming together, and although, as must always be the case where people are ambitious and anxious to improve their status, difficulties are sure to arise, I am certain that they will be amicably settled if both sides maintain a reasonable attitude, and so long as it is remembered that wages are governed by economic forces, and that no industry can exist unless there is a reasonable margin between the costs of production and the amount realised by the marketing of its product.

The results of this year's operations at Brakpan Mines have been more than satisfactory. Our monthly tonnage milled is on the increase, the development outlook is very good indeed, and working costs are coming down slowly but surely.

Taken as a whole, the position is so encouraging as to justify optimism, and granted a continuance of the good development results now being obtained in the area served by the No. 3 shaft, we should at no distant date be able to supply the mill with its full capacity of 70,000 to 75,000 tons a month. Shareholders may therefore look forward with confidence to the distribution of good dividends.

Government Percentage.

There is one other matter to which I must refer. Numerous enquiries have been received from shareholders as to the authenticity of certain figures which have reached them purporting to show the percentage of our profits payable to the Government under the lease area agreement.

The statement, which is to the effect that under the mineral lease scale we shall have to pay the Government—in addition to ordinary taxation—25 per cent. of our profits, is entirely incorrect. Indeed, shareholders would be in a happy position if the grade of the mine were so high and working costs so low that the percentage of profit payable to the Government worked out at anything like 25 per cent.

If I were to say what the dividend prospects and the market price of the shares would be in such circumstances it would sound like a fairy tale. As an example of the actual percentage payable by Brakpan Mines, assuming a grade of [illegible], working costs 21s. 6d., and profit 12s. 6d. per ton milled, and with an average monthly tonnage of 65,000, after making due allowance for capital expenditure and amortisation during the official life of the mine, the Government would be entitled to approximately 15 per cent. of our profits.

Last year we paid 12½ per cent., which is the minimum under the scale, but the actual percentage worked out at only 0.63 per cent.

Wild Statement.

I regret having to call attention to a wild statement of this kind, but do so in order to allay any uneasiness which it may have caused our shareholders. The parties responsible for circulating the figures have not the necessary data for calculating the percentages with a reasonable approach to accuracy, and I would suggest for their consideration the advisability of obtaining accurate information from the officials of the company instead of issuing statements which are not only erroneous but liable to cause apprehension in the minds of shareholders.

As will be seen from the report of the directors, the Consolidated Mines Selection Company has disposed of its South African assets to the Anglo-American Corporation of South Africa, Ltd., and the administration of this company's affairs has been placed in the hands of that Corporation.

In conclusion, I should like to express our appreciation of the most excellent and valuable services rendered by Mr. Carl Davis, our consulting engineer, Mr. Brodigan, our general manager, and the mine and head office staffs, and to place on record our acknowledgment of the ability with which Mr. C. K. Pitt conducted the management of the mine during the absence on long leave of Mr. Brodigan. To all these gentlemen our best thanks are due.

The report and accounts were then passed without a dissenting vote.

Daggafontein Mines.

GOOD PROSPECTS—STILL AWAITING CAPITAL—CHAIRMAN'S STRAIGHT TALK.

The annual general meeting of the Daggafontein Mines, Ltd., was held in the Corner House, Johannesburg, on the 12th June. Mr. P. R. Lynch was in the chair, and, in moving the adoption of the annual report and accounts, he said:—

Gentlemen,—There is very little of interest for me to report to you to-day, as the position of your company and the prospects of your property have undergone no change since the issue of the directors' report.

During the year your directors have continually kept in view the desirability of reopening the mine, but unfortunately an opportunity of raising the necessary funds has not presented itself. It is true that money has been found for other mining ventures during the past few months, but in all these cases the companies were actually at work and had already developed very considerable "ore reserves."

It is to be regretted that we are not in a similarly fortunate position, and that, consequently, we are confronted with great difficulty in raising the necessary funds with which to recommence mining operations. There is so much uneasiness in financial circles to-day, mainly to the unsettled political conditions, that financiers are not disposed to advance the large sums of money necessary for opening up a mining venture on what is, to all intents and purposes, virgin ground, unless there is very clear evidence that the parties interested—by which I mean not only the directors, but also the shareholders—are themselves prepared to show confidence in their property in an unmistakable manner by providing a substantial proportion of the new capital that it required.

I am sure that if we are to attain the desired end, shareholders will be called upon to assist materially in the provision of new funds, and this will be one of the features of any scheme which the directors may put forward.

Reasonably Good Prospects.

It is undeniable that the property has reasonably good prospects, and this has been further confirmed during the year in the development of adjoining and adjacent mines, where the payable shoots of ore have continued to follow a north-westerly-south-easterly direction. There can be little doubt that these shoots extend into your property, but it is, of course, impossible even to hazard a guess as to their size or the value of their contents until the ground is developed. Various haulageways in Springs Mines are being extended towards the eastern boundary of that company's property, which is the western boundary of Daggafontein, and the information obtained from this development will be of value to us in gauging the future prospects of our property.

Many of you will remember that at the last annual meeting I stated that suggestions had been made to the Union Government as to the means of facilitating the attempts of your directors to provide fresh capital, and that, while our representations were sympathetically received, the Government was unable to act upon them in consequence of legal difficulties.

Efforts Continued.

Your directors have continued their efforts to arrive at a satisfactory agreement with the Government. It is, I think, quite clear that it will only be possible to find the necessary capital for the further exploitation of your property in the event of our negotiations with the Government resulting in such a proposal as will commend itself to investors. It is not necessary for me to emphasise the importance to the country in general and to the Transvaal in particular of resuming mining operations on the farm Daggafontein. Should our negotiations prove successful, a scheme for raising the necessary funds will be submitted to shareholders, together with full details of any agreement we may come to with the Government. You will then have an opportunity of proving that you share the confidence of your directors in the future of the mine, and that you are prepared to assist in the opening up and development of the property.

As will be seen from the report of the directors, the Consolidated Mines Selection Company, Limited, has disposed of its South African assets to the Anglo-American Corporation of South Africa, Limited, and the administration of this company's affairs has been placed in the hands of that corporation.

The annual report and accounts were adopted and the meeting terminated.

Sweden and the Gold Standard.

The Riksbank report to the Swedish Government concerning the restoration of the gold standard states that such a course of action will not be feasible till political and economic stability is re-established in Europe. While it will endeavour to maintain the kroner at par with the dollar, the Riksbank does not propose to introduce specific convertibility into gold except in company with other Continental countries. This may not be so remote as the directors believe it to be.

Springs Mines, Limited.

PLANT GIVING "THE GREATEST SATISFACTION"—GOVERNMENT'S SHARE OF PROFITS.

At the annual meeting of the Springs Mines, Ltd., held at the Corner House, Johannesburg, on June 8, the chairman, Mr. F. R. Lynch, in moving the adoption of the annual report and accounts, said:

At previous annual general meetings it has been the practice to compare the results obtained for the period under review with the relative figures for previous years. To do so on this occasion, however, would serve no useful purpose owing to the disorganisation which took place during the first quarter of 1922, when mining operations were practically suspended as a result of the strike. Such a comparison would have been of little value in any case, because during the year the nominal crushing capacity of the plant was increased from 40,000 to 50,000 tons a month by the installation of new plant under the "all sliming" process, while amalgamation was entirely abandoned in favour of cyanidation, and precipitation of the gold—which had previously been effected by means of zinc shavings in extractor boxes—was replaced by the Crowe-Merrill process.

During the period under review 424,090 tons were milled, of which 279,000 tons were dealt with during the second half of the year. The working profit was £347,117, which, together with £59,541 derived from the clean-up of the obsolete precipitation plant, made a total of £406,658. The amount received by way of premium on gold was £54,127, a reduction of £161,000 compared with the corresponding figure for 1921. The average grade milled was better by about 9d. per ton at 38s. 0·17d., and costs were reduced from 29s. 8·36d. to 24s. 2·36d., the resultant working profit being 13s. 9·81d. per ton milled as compared with 7s. 6·14d. for 1921. For the second half of the year, when operations were practically normal, the value of the ore crushed improved to 39s. 4·12d., working costs were reduced to 22s. 11·26d., and the working profit rose to 16s. 4·86d. per ton milled.

Reduction of Costs.

Your general manager, in commenting on the reduction of costs, states that since the resumption of operations there has been a considerable increase of efficiency, which he attributes to the restoration of managerial authority and the reorganisation of work, which resulted in the elimination of a number of redundant men. He also reports that a willing spirit was shown by the European employees generally. The effect of this was at once apparent in the greater energy displayed by the native labourers.

The consequent improvement in underground efficiency and costs was enhanced by a change in the contract system, the elimination of night shift work, the more economical use of mine stores and the introduction of a bonus system. The cumulative effect of these influences on underground efficiency, as compared with the previous year, was illustrated by a reduction of 3 inches in the average stope widths, and by an improvement of 28 per cent. in the fathomage broken per machine shift.

The development footage accomplished during the year amounted to 13,452 feet, of which 9,550 feet were on reef averaging 23·01 dwts. over 17·76 inches. Of the footage on reef, 50·2 per cent. was payable, and averaged 33·70 dwts. over 21·4 inches, or 721 inch-dwts., which is a higher result than we have experienced in any previous year.

Increased Ore Reserve.

Although for the reasons I have given it was only possible to do 13,452 feet of development as against 22,960 feet in 1921, I am glad to say that our ore reserve shows what must, under the circumstances, be considered a gratifying increase of 90,000 tons, and now stands at 3,146,217 tons, with an average stope width of 59·81 inches and an average value of 8·79 dwts., or 526 inch-dwts., as compared with 549 inch-dwts. at December 31, 1921.

The average value of ore broken from the payable ore reserve during the year was 9·73 dwts. over an average stoping width of 57·7 inches, or 561 inch-dwts., while, as I have already stated, the payable development for the year gave an average result of 721 inch-dwts. The fixed charge for development of 5s. per ton milled covered the expenditure under this head during the year.

While there was no change in the nominal capital of the company during 1922, the issued capital was increased by £93,500. Under the lease agreement, the Consolidated Mines Selection Co., Ltd., was called upon to take up these shares at £3 per share. Of the shares taken up, the proceeds of 80,500 were required for shaft sinking and preliminary development and the proceeds of 13,000 were applied to the redemption of the debenture debt.

Mr. F. R. Lynch,
Chairman of Springs Mines, Ltd.

Ex-Enemy Shares.

The calling up of the shares set aside for the redemption of debentures was necessitated by the purchase from the Custodian of Enemy Property of debentures to the nominal value of £30,420 at £90 per cent. At the end of the year, therefore, the issued capital of the company was £1,420,736, leaving a further 79,264 shares to be taken up at £3 per share, and the debenture debt had been reduced by purchases and redemption to £54,420.

The only other item on the balance sheet which calls for comment is the reduction in the value of stores and materials on hand in excess of standard stock. The amount so invested has fallen from £150,384 to £51,138, general stores having been reduced by £19,388, and construction stock by £79,859. We expect to still further reduce the value of stores on hand during the present year.

The working expenditure and revenue account shows that the working profit for the year amounted to £406,658, which includes £54,126 premium on gold, and £59,541 from the clean up of the obsolete plant. The premium received on gold in 1922 was, as I have already mentioned, £161,000 less than was received in the previous year. After providing for the strike expenses, £73,823, expenditure in connection with the purchase of ex-enemy shares £9,319, and sundry items amounting to £8,015, a balance of £315,777 was carried to the appropriation account, and, together with the balance of £73,430 brought forward from 1921, made a total sum of £389,207 available.

How Profits Were Dealt With.

This was dealt with as follows:—

Appropriated for Union Government and Provincial taxation	£39,031
Government participation in profits under the mineral lease	11,448
Appropriation for re-organisation of plant and equipment	76,714
Dividend No. 7 of 15 per cent.	213,110

leaving an unappropriated balance of £45,904 to be carried forward.

The extension of the reduction plant, involving an increase in its capacity from 40,000 tons to 50,000 tons a month, was completed about the middle of the year. Upon the resumption of operations after the strike it was decided to take advantage of the reorganisation of the work to eliminate the amalgamation process and to treat the whole product of the old and new sections of the milling plant in the cyanide works.

As shareholders are aware, the new section of the plant is designed to produce a one-product pulp suitable for direct cyanidation as a slime. This is effected by tube-mills working in closed circuit with Dorr classifiers, the feed of the tube-mills being the direct product from gyratory crushers operated with a choked feed. I am pleased to say that the results obtained up to the present from this "All Sliming" process considerably exceed our anticipation, and that the plant is giving us the greatest satisfaction.

Saving by New Plant.

The actual reduction costs for the new section of the plant, compared with the old, for the month of March, 1923, show a saving of 6·251d. per ton treated, and the increased extraction due to the finer degree of comminution of the ore thus made economically feasible, amounts to 10·92d. per ton treated, giving a combined saving to the new process as compared with the old of 1s. 5·191d. per ton treated.

The capital cost of the extensions under the new process shows a very considerable saving over that necessitated by a plant built on standard lines. We find that the total capital cost of a new crushing plant of reasonable size under the all-sliming system may be taken to-day at £5 per ton crushed per month. Careful estimates by our technical advisers show that the equivalent cost of a plant designed on the old lines would be £7 per ton milled per month. The saving of capital cost under the new system is therefore approximately 30 per cent.

It will be remembered that at our last annual meeting I stated that plans were being proceeded with for the installation of further additional plant under the all-sliming process so as to increase the crushing capacity to 60,000 tons a month. The necessary plant for this purpose is now on order, and it is anticipated that it will be installed and in operation by the end of October next. We have already begun work on the conversion of the original reduction plant to an all-sliming plant, but the really effectual portion of this will not be taken in hand until we are in a position to mill on the nominal basis of 60,000 tons a month.

Cost of Reorganisation.

The estimated cost of the reorganisation of the original plant is £76,714. This sum has been appropriated out of the profits for last year, but it will be seen, on reference to the accounts, that the clean-up of the obsolete plant provided £59,541 of the amount.

The report for the quarter ended March 31 was issued towards the end of April, and those of you who have read it will have noticed that the tonnage milled during the three months was 151,200 tons, or an average of over 50,000 tons a month, notwithstanding that in the short month of February only 47,000 tons were treated. The yield was 39s. 7·1d., and working costs 22s. 6·92d. per ton milled, the resultant working profit being £131,203.

Working costs were affected by a gratifying decrease in some of the stope widths and by closer sorting, the percentage of waste discarded having risen from an average of 13·96 per cent. in 1922 to 16·81 per cent. in March. Although these factors made for higher costs, they resulted in a more than compensating advantage in the yield, which improved from an average of 38s. for last year to 41s. 1d. for the month of March. The estimated premium on gold for the quarter is only £2,540, which is a very insignificant amount compared with even the receipts for last year.

Development Maintained.

The development footage for the quarter amounted to 5,214 feet, and the 3,340 feet sampled gave an average value of 20·61 dwts. over 16·33 inches. Of this footage, 1,595 feet, equal to 48 per cent., was payable, the average value being 32·82 dwts. over 18·15 inches, or 595 inch-dwts. These results are being maintained, and good values are being disclosed not only in the eastern and north-western sections of the mine, but also in the area now being opened up to the south-west of the No. 3 shaft.

The promising results being obtained in this area will exercise an important influence on the future of the mine, and it is confidently anticipated that the reef disclosures will have a considerable bearing on our ore reserve.

Generally speaking, I may say that the results of operations during the past five months have been very satisfactory and give promise of a successful year. The increase in the capacity of the plant to 60,000 tons per month, which will be completed by the end of October, will mark the practical termination of our present programme of capital expenditure. From that date onwards we may look forward to steady and regular returns from a plant more commensurate with the size of our mining area.

It is only then that the true value of our property will be apparent, and shareholders will be rewarded in increased dividends for their enterprise and patience.

In saying this I do not wish to convey the false impression that a reduction plant with a nominal capacity of 60,000 tons a month indicates the limit of economic production which Springs Mines is likely to attain. We still have a vast extent of totally undeveloped ground, and it is obvious that the development of these virgin areas may have an important bearing on our ore reserve and our future scale of operations. With this position in view, our production works have been so designed as to allow of convenient and rapid expansion.

Before concluding my remarks, there is one other matter with which I must deal in order to remove a little uneasiness which it has caused to some of our shareholders. During the past few weeks several shareholders have asked me if there is any truth in a statement sent to them, purporting to show, *inter alia*, that the amount payable by us to the Government under the mineral lease agreement for the year 1923 would be equivalent to 30 per cent. of our profits, in addition to the ordinary taxation common to all gold mining companies.

I have told those gentlemen who approached me that the figure of 30 per cent. is quite inaccurate.

It is impossible to calculate the percentage payable to the Government without such data as the amortisation allowance over the official life of the mine, sundry revenue and other considerations, and the parties responsible for the issue of the statement to which I refer did not have that information.

As an example of the actual percentage payable by Springs Mines, I may say that assuming a grade of 40s. per ton, working costs at 22s. 6d., and an average monthly tonnage of 53,000, the Government would be entitled to approximately 20 per cent. of our profits.

The parties who circulated the inaccurate figures did not approach us in order to obtain confirmation of their calculations, and I would suggest for their consideration that, should they decide to issue further statements of a similar kind, it would add to the value of their figures if they obtained accurate information from the officials of the company.

Since the end of the year Mr. W. S. Saunders has resigned his seat on the board, and you will be asked to confirm the appointment of Mr. L. A. Pollak in his place.

As will be seen from the report of the directors, the Consolidated Mines Selection Company has disposed of its South African assets to the Anglo-American Corporation of South Africa, and the administration of this company's affairs has been placed in the hands of that corporation.

In conclusion, I have to express our appreciation of the excellent services rendered during the year by Mr. Carl Davis, the consulting engineer, Mr. A. A. Coaton, the general manager of the mine, and the technical and clerical staffs at the mine and the head office.

The report and accounts were duly seconded and passed unanimously.

West Springs, Limited.

DEVELOPMENT DISCLOSURES—"EXCEEDED OUR ANTICIPATIONS"—A PROSPEROUS CAREER FORETOLD.

Sir E. Oppenheimer presided at the annual general meeting of the West Springs Mines, Ltd., held on June 8 at the Corner House, Johannesburg. He addressed a well attended meeting as follows:—

Gentlemen, A period of twelve months in the life of a developing mine sometimes has the effect of changing its prospects almost beyond recognition. At the last general meeting of shareholders the chairman stated that although the results obtained up to that date were somewhat disappointing, it would be safe to assume that the rich shoots which had been opened up in the adjoining properties would continue into the West Springs area.

It affords me very great pleasure to say that this optimistic view has already been justified, and to congratulate shareholders on the good development disclosures of the past year. It is also my pleasant duty to congratulate Mr. Bushell, our mine manager, on the very excellent rate of progress made during the last eight months of the year.

The industrial troubles experienced in the early part of 1922 were responsible for the entire cessation of operations for more than three months, but since work was resumed, development has proceeded in such a way as to deserve our warmest appreciation. These results would have been impossible but for two factors: firstly, the efficient lay-out of the mine and system of ventilating devised by our technical staff; and secondly, the hearty co-operation of the manager and the officials and employees on the mine.

Large Payable Tonnage Indicated.

The development disclosures during the year, to which I will refer later, were sufficiently good to warrant the directors in raising the funds required to bring the mine to the producing stage, and to-day we stand in the fortunate position of having a large tonnage of payable ore indicated, a reduction plant on order, and the prospect of the producing stage being reached in the early part of 1924.

In order to utilise our financial resources to the best advantage, no sinking was done during the year at No. 2 shaft, and we concentrated upon development work. The development footage for the year in the No. 1 shaft area totalled 12,127 feet, of which the 8,450 feet sampled indicated an average assay value of 9·33 dwt. over 30·89 inches.

Of the sections sampled, 49·1 per cent showed payable values averaging 14·05 dwts. over 33·33 inches, or 468 inch-dwts. So far, chiefly primary development has been undertaken, it being considered that the best interests of the company would be served by the rapid extension of the haulageways, so that as many of the ore shoots as possible could be intersected. This policy has been continued during the present year, but it will be necessary to curtail the primary development and push on with the secondary development in the immediate future in order to provide sufficient working faces from which to stope the necessary tonnage of ore to meet the requirements of the mill.

Consulting Engineer's Report.

In his annual report, your consulting engineer estimated that at the end of 1922 the development accomplished had disclosed an indicated tonnage of one and a half million tons of an average value of 6·49 dwt. over a stoping width of 62·3 inches. The additional exposures up to the end of March had increased these figures to 1,762,000 tons, and 7·07 dwt. over 63 inches, respectively. He further estimated that if the percentage of payability for that part of the mine now being developed is equal to that obtained in the past, the indicated tonnage would be increased to a total of two and a half million tons by the end of this month. I may tell you that the development results since the end of March have exceeded our anticipations as to value. It is impossible at the moment to recalculate the indicated tonnage, but I have every confidence that the figure of two and a half million tons will be reached—if it is not exceeded—by the end of June, and that the average value will be higher than the figure last mentioned.

You will no doubt have noticed that I made use of the words "indicated tonnage." The reason for this is that when development is proceeded with on the broad lines shown on the plan which accompanies the directors' report, or by means of what is known as "primary" development, the values and tonnages cannot be estimated with any great degree of accuracy, and the expression "indicated tonnage" is used in order to distinguish clearly between ore exposed by means of haulage ways only and ore which is fully developed and ready for stoping. As soon as the haulage ways are connected, and the continuity of the ore shoots exposed in primary development is confirmed by means of subsidiary development, a more exact determination of tonnages and values is possible, and provides the information upon which to calculate an "ore reserve."

By means of the plan of the mine workings to which I have referred, you will more easily be able to follow the values in the various haulage ways. On the first page of the manager's report you will see the footages accomplished in each of the headings during the year, and also the average assay values. I wish specially to direct your attention to the reef widths. For the 8,450 feet sampled the average width is 30·89 inches, and for the payable sections of this footage the average width is 33·33 inches, giving an average value of 14·05 dwts., or 468 inch-dwts. The results for the first quarter of this year indicate that 1,305 feet were payable, the reef width being 48·39 inches, and the value of 13·88 dwts., or 671 inch-dwts. This result compares most favourably with the values found in Brakpan Mines and Springs Mines, where the ore reserevs at the end of last year were valued at 576 and 526 inch-dwts. respectively. More recent development in West Springs has resulted in the maintenance of these high average values, the figure for April being 1,001 inch-dwts.

If you will again look at the plan for a few minutes I will endeavour to explain the method of development. The east haulage is connected with the Springs Mines' workings, and its course is practically due east. The north-east haulage was first driven due north, but has now been turned to the north-east. Diagonal haulage No. 1, diagonal haulage No. 2, and diagonal Haulage No. 3 are all driven in a north-easterly direction, and are parallel with the present direction of the north-east haulage.

Experience on Far East.

It has been our experience on the Far East Rand that the payable ore shoots follow a north-westerly to south-easterly direction, and the method of development at West Springs should ensure that the payable ore shoots in the northern area of our property must in due course be intersected. It will also be apparent that when a shoot is intersected in any one of the haulages we shall have an indication as to where it may be expected in the adjoining haulages.

The area enclosed in red on the plan indicates the ground within which is included the indicated ore reserve as at December 31, 1922, and its boundaries have been fixed by the information obtained in the various haulage ways. In diagonal haulage No. 1 we now have a stretch of over 1,100 feet, and excluding 154 feet which is unpayable, there is 955 feet of payable ore which including the borehole results from sections where the haulage is off the reef gives an average value of 20.4 dwts. over 15.7 inches, or 323 inch-dwts. Should these results be duplicated in the haulage parallel to the diagonal haulage No. 1—as past experience warrants our expecting—it is easy to see what the effects will be on our ore reserve.

Within the last few days the reef in the diagonal haulage No. 2 on the north side of the dyke, has been intersected by means of bore holes which indicated the proximity of the reef, the assay value of the borehole cores being moderate. Too much attention should not be paid to the borehole results, however, as the holes were put down from the haulage to the reef, which is below, and most probably a portion of the reef has been ground away. Since the borehole results were obtained, the reef has been encountered in the haulage and gives an average of 603 inch-dwts.

No. 1 Shaft Dyke.

There is one other feature concerning the development of the mine with which I wish to deal, because I understand it has caused a little uneasiness in the minds of some shareholders. I refer to the dyke to the west of No. 1 shaft, which runs in a north-west to south-east direction through the property. The large dyke near the western boundary in the Modder Deep has been exposed in various levels in Brakpan Mines. Its position and direction in these properties are in agreement with the exposures of the large dyke in your mine, and the correlation of the latter with the Modder Deep dyke is fairly assured. On the other mines mentioned it has been the invariable experience that this intrusion does not cause any serious displacement of the reef—in many places the displacement is not more than a few feet—but what is of far greater importance is that it does not affect the values of the reef in any way. This is confirmed to a certain extent in the west haulage from our No. 1 shaft, and therefore we have every reason to anticipate that the values now being found on the eastern side of the dyke in our property will be repeated on the western side of it. Of course, in dealing with a question of this sort one must of necessity take a good deal for granted, especially as the workings are so far apart; but, at the same time there are certain facts, which give us good reason to think that our anticipations will in all probability be correct.

New Debenture Issue.

The continuance of the good development disclosures to which I have referred inspired your directors and the largest shareholders with optimism as to the future of the company, and it became apparent that the time had arrived to proceed with the erection of a reduction plant so that the property could be brought to the producing stage. The amount of £1,400,000 originally provided will be exhausted by the end of this month, having been expended on what may be termed "pioneer work." It is now estimated that a sum of £500,000 will be required in order to pay for the reduction plant and to provide for the continuance of primary and secondary development work until such time as profits are forthcoming. As you may be aware it is not an easy matter to find a sum of this magnitude in these times. However during my recent visit to England I discussed the subject fully with my friends there, and was successful in getting them to agree to assist in guaranteeing the amount required on terms which I think you will consider very favourable to this company. Particulars of the debenture issue have already been submitted to you, but it may be advisable for me to detail them again to-day.

Terms Offered to Shareholders.

A 6 per cent. debenture issue of £350,000 was offered at par to shareholders pro rata to their shareholdings and was fully subscribed. The issue was underwritten by the Anglo-American Corporation of South Africa, Ltd. The debentures are redeemable at £105 per cent. in eight annual drawings, the first of which will take place in December, 1925. The subscribers of the debentures were granted an option to take up at par until December 31, 1921, one new share for every £2 of debentures subscribed for. In addition to the debenture issue, the Anglo-American Corporation agreed to make an unsecured loan of £150,000, upon which interest will be charged at the rate of six and a half per cent. per annum, calculated on the daily balance.

In this way the estimated amount required to bring the mine to the producing stage on the basis of 40,000 tons a month was provided. The Anglo-American Corporation receives a commission of five per cent. for underwriting the debenture issue and providing the loan facilities.

I would also point out that, should the options be exercised, your company will receive a further £175,000 capital, which will greatly facilitate the financing of the company when the time arrives for us to increase the capacity of the plant to 60,000 tons per month.

In view of the success which has attended the "All Sliming" plant erected at Springs Mines, it has been decided to install that process at West Springs. We shall start with a plant having a nominal capacity of 40,000 tons a month, and the lay-out has been so arranged as to permit of the installation being enlarged as and when circumstances warrant such a course. The extension of the plant to a capacity of 60,000 tons a month can be expeditiously and economically effected at any time.

The New Process.

As is well known, a higher percentage of extraction can be obtained from an ore which has been reduced to a state of "all-slime" than from one in which the process of comminution has only proceeded far enough to give a mixture of sand and slime. Up till recently it has not been economically feasible to reduce the whole of the ore to the desired degree of fineness.

The new process of tube-milling preceded by single stage crushing, without stamp milling, has now rendered it economically possible to carry the ore to the finer degree of comminution, with the attendant increased extraction. Incidentally, the capital cost of an "All Sliming" reduction plant is considerably less than under the standard process.

The recovery of the gold will be carried out entirely by cyanide solution without any amalgamation, and the precipitation of the gold will be effected in Merrill presses working in conjunction with the Crowe Vacuum process.

The new plant is of a very compact type, enabling close and continuous supervision to be more effectively maintained than does a plant of the other type. This feature, in combination with the entire elimination of the treatment of sands and of amalgamation will, it is confidently expected, result in a low figure of reduction costs being attained.

A Prosperous Career.

In the exploitation of deep level mining ventures, it is common experience that many anxious periods have to be faced. There are invariably phases of poor development, shortage of funds, or other causes of uneasiness which must be overcome. I feel to-day that we have passed through these primary difficulties, and I fully expect that by the time the next annual meeting of shareholders is held, the milling plant will be in operation, and your company will have had a fair start on a prosperous career.

We have this morning received advice from the mine of further results which are most encouraging. The reef in the No. 3 diagonal haulage has been recovered on the other side of the dyke, and the samples taken every five feet over a distance of 25 feet are as follows, (1) 267 inch-dwts., (2) 360 inch-dwts., (3) 159 inch-dwts., (4) 411 inch-dwts., (5) 445 inch-dwts.

It will be noticed that the values improve as the heading proceeds, which is common experience on the Far East Rand when a haulage way is entering a pay shoot. Further, the reef in the west haulage No. 2 has passed through the poor zone and the latest assay values average 510, 707 and 647 inch-dwts., respectively.

These figures supply further confirmation of our opinion that the shoots spread right across the mine and will have an important bearing on the ore reserve.

As will be seen from the report of the directors, the Consolidated Mines Selection Company has disposed of its South African assets to the Anglo-American Corporation of South Africa, Limited, and the administration of this company's affairs has been placed in the hands of that Corporation.

The Shareholders' Thanks.

Before concluding my remarks, I am sure you will wish me to express the thanks of shareholders to Mr. Carl Davis, the consulting engineer, and to Mr. Bushell, your mine manager, and his staff for the very excellent work they have accomplished during the year.

Since the close of the year Mr. A. F. Lyall has resigned his seat on the Board, and you will be asked to confirm the appointment of Mr. L. A. Pollak in his place.

I now beg to move that the directors' report and the accounts for the year ended December 31, 1922, as submitted, be adopted.

The directors' report and accounts were proposed and seconded, and unanimously adopted. Mr. L. A. Pollak was duly elected as a director of the company.

Appeal.

I have been approached by the Committee responsible for the organisation of the South African section of the British Empire Exhibition with the view to raising the funds which are necessary in order to ensure that the Union of South Africa will be properly represented. As is well known the Exhibition is to be held in London in April of next year, and there is no doubt that the enterprise is of such magnitude that it will attract many thousands of visitors.

It has been decided that the Union of South Africa will be represented in common with other Dominions and the Union Government is contributing a sum of £50,000 for the purpose. The Committee has arranged for the erection of a suitable pavilion, which will cover 40,000 square feet, in which the Union exhibits will be housed. No difficulty is being experienced in securing far mere exhibits that can be accommodated. The pavilion alone will cost about £32,000, and when the expenditure, which will be necessary for interior decorations, fittings, show-cases, furniture, provision for live stock, freight, railage, insurance, light, water and power, caretakers, cleaners, attendants, etc., is added it will be seen that a sum considerably greater than £50,000 will be necessary if the Union of South Africa is to be represented properly. In fact, it is estimated that the total cost will be in the neighbourhood of £100,000.

It has, therefore, been decided to appeal to local authorities companies and private persons with the object of raising the additional amount necessary. Subscriptions amounting to £7,000 have been promised by South Africans in England, and the London Committee has no doubt that when the people of South Africa respond a further amount will be forthcoming. Australia is spending £250,000, New Zealand £150,000, and while it is not to be expected that the Union of South Africa can equal the effort of these Dominions, it is considered that this country should be able to provide an exhibit which will be worthy of it and should not be of such a nature as will tend to unfavourable comparison with the results achieved by other Dominions. The Prime Minister at the opening meeting of the Committee said:—

> "It is necessary for us as a great producing country to look ahead and look forward to other parts of the world and for that purpose we have spent large sums of money annually in advertising South Africa";

and

> "to the Empire Exhibition would come business men and consumers from all parts of the world and the effect of South Africa's representation at the Exhibition would be that her markets and industries would receive such a filip as they had never received before.

Money is urgently needed and I have no hesitation in appealing to all who can help. We all know that unless South Africa keeps abreast of the times and uses its utmost endeavour to keep the rest of the world aware of its great resources and capabilities we shall be left behind. We must take the place to which we are justly entitled in the world's markets and the accomplishment of our aim must be to the advantage of all South Africans, whether they are manufacturers, producers, retailers or consumers.

All donations, which may be sent to me personally, will be acknowledged in the Press.

A. G. ROBERTSON,
Administrator of the Province
of Transvaal.

Administrator's Office,
Pretoria.
June, 1923.

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of May, 1923:—

Mine.	Tons Crushed.	Revenue from Gold. £	Total Working Costs. £
Government G.M. Areas	153,000	285,835	134,555
Langlaagte Estate	103,800	134,332	102,979
New Primrose	21,800	20,951	19,313
New Unified	12,200	10,720	9,943
Randfontein Central	195,000	233,883	195,258
Van Ryn Deep	63,300	125,398	62,802
Witwatersrand	47,000	53,223	42,247
Totals and averages	596,100	864,342	567,097
April totals	558,850	805,235	535,692

Mine.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue £
Government G.M. Areas	17.588	152,040
Langlaagte Estate	19·842	*31,863
New Primrose	17·718	1,803
New Unified	16·299	836
Randfontein Central	20·026	40,001
Van Ryn Deep	19·843	63,534
Witwatersrand	17·977	12,034
Totals and averages...	19·026	302,111
April totals	19·171	274,671

*The declaration of the Langlaagte Estate and Gold Mining Co., Ltd., includes the results for the Consolidated Langlaagte Mines, Ltd., as the two companies were amalgamated during the month.

New State Areas, Ltd.—This company makes no declaration for the month of May.

Note.—The above results are arrived at by calculating the gold at £4 8s. 6d. per fine ounce.

SOUTH-WEST DIAMONDS (1920), LIMITED.

The secretaries report operations for the month of May as follows: Cubic metres mined, 1,205; cubic metres treated after sifting, 232; stones per carat, 5·47; carats, 205.

G.E. Factories. No. 4.

The home of Quality Products.

Trade Mark.

5,500 Employees *Ground Area 64 acres* *Floor Space 1,445,000 sq. feet*

These are our Fort Wayne Works.

Where we manufacture:

FRACTIONAL H.P. MOTORS,
METERS AND INSTRUMENTS,
TRANSFORMERS,
SMALL D.C. GENERATORS,
Etc., Etc.

The General Electric Co. of N.Y. has the distinction of being not only the largest, but also the best equipped, manufacturer of electrical apparatus in the world.

Just think what this means to you.

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COMPANY, LIMITED.

G-E Building
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WITH AGENTS THROUGHOUT SOUTH AFRICA

Railway Electrification in Natal.

THE COLENSO STATION AND WORK ALONG THE ELECTRIFIED ROUTE HOW WORK IS PROGRESSING—SOLVING THE PROBLEMS OF A HEAVILY-LADEN AND DIFFICULT SECTION—WELL-KNOWN ENGINEERING FIRMS SECURE CONTRACTS—THE CRITICAL VIEW—A BIG STEP FORWARD IN RAILWAY ENTERPRISE IN SOUTH AFRICA.

[By our Special Commissioner in Natal.]

The traveller by train passing through the Natal battlefields may observe from his carriage window to-day a big steel structure rising up from the ground at Colenso, not far from the Tugela River, and almost on the site of Buller's Disaster in December, 1899. Further along the main line and close to Estcourt may be observed a number of big red painted standards. These are symbols of present day progress in railway work in South Africa, and they march side by side with war memorials and place names with a martial ring, which mark the sites of many a desperate encounter between Briton and Boer nearly a quarter of a century ago. The action is now, however, changed Industry has arisen out of the blood-stained veld, and under an Administration ordered by a joint Government of the two races work is now being carried out, which aims at a satisfactory solution of a good part of Natal's transportation problem.

The steel structure rising up from the veld at Colenso is the beginnings of the new power station which will supply electricity to the Glencoe-Maritzburg section of the railway, and the red painted standards will ere long be bearing the cables along which current will be supplied

A Sorely-Taxed Railway Section.

The Glencoe-Maritzburg section of the main Johannesburg-Durban line is 180 miles in length, and it carries some of the heaviest traffic of any railway in South Africa. Glencoe, at one terminal of the first electricity section of the S.A.R., is in the heart of the old main line coal field of Natal, and from northwards from Hatting Spruit and Dannhauser and Newcastle thousands of tons of coal a month pass southwards to Port Natal.

At Glencoe, the Paulpietersburg-Vryheid line comes in, and along it continuously run coal trains loaded with fuel from the newer mountain coal fields—from Enyati and Hlobane, the Tendegas and Dumbe. South of Glencoe more coal-laden trucks travel along the main trade artery and bear additional coal trucks from the Dundee pits and from Elandslaagte. There is in addition a very large amount of general goods and passenger traffic to be carried over this line.

Nearer the coast numerous duplications and branch deviations have of recent years been completed, and eventually the whole section from Glencoe to the Bluff and Point will be brought under the driving force and control of electricity.

But for the time being attention has been focussed on getting the Glencoe-Maritzburg section in working order This line not only carries some of the heaviest and most dense traffic of any section of railway in South Africa, but it also passes through some of the most difficult country in the Union, and it has been selected as a section which will be peculiarly responsive to the elasticity of working which the change over from steam to electricity will mean

The consulting engineers of the scheme, Messrs. Merz and McLellan, have a great part of the most important of the work now well in hand, and a brief description of some of the more important features of the Colenso Station and the general arrangement along the line should be of interest here.

General Arrangement of the Power Station.

The site of the Power House is on the right bank of the Tugela River, a few hundred yards from the railway station at Colenso. It is connected up with the main railway by means of a branch line The boiler house lies at right angles to the engine room The transformer chambers and pump house are on the opposite side of the engine room from the pump house and an extension of the engine room on the north-west side forms the switch house

Boiler Plant.

The boiler house is 148 feet long by 12 feet wide, with room for extension. It contains eight water tube Babcock and Wilcox boilers, capable (with superheaters and airheaters) of producing 60,000 lbs. of steam per hour at a pressure of 270 lbs. per square inch above atmosphere superheated to 700 degrees Fahrenheit. The boilers are arranged on the back-to-back principle, with provision for the application of a coal treatment system. A steel plate overhead bunker, capable of holding 500 tons of coal, is arranged above each row of boilers. Stokers are of the travelling grate type. The mechanical draught system consists of Sirocco, fans and the boilers are fed by four turbine pumps exhausting into feed heaters.

The Engine Room.

In the engine room there are five Parson's turbo-alternator sets. Each will provide a continuous output of 12,000 k.w. at 6,600 volts 3-phase, and an output of 20,000 k.w. for two minutes.

Condensers are of the twin type. There are five circulating water pumps of the vertical centrifugal type, and in the engine house there is a 60-ton crane The condensing water pipes are being supplied by Messrs Ashmore, Benson, Pease and Co., Ltd., and Messrs. Blakeborough and Co., Ltd. The transformer chambers are arranged to accommodate the static transformer sets, one being allocated to each generator unit. Normal output of each of these unit transformers is 500 k.v a., the ratio of transformation being 6,600 to 415 volts. In addition, there are four station transformers, the capacity of each being 900 k.v.a., and the ratio the same as in the case of the unit transformers. The transformer plant is being supplied by the Metropolitan-Vickers Electrical Co., Ltd.

Messrs. A. Reyrolle and Co., Ltd., are supplying the switch gear. The switch house is 136 feet long and forms an extension of the engine house The coal and ash-handling plant has been ordered from Robert Dempster and Sons, Ltd., of Elland, and five step-up transformers, which will raise the voltage from 6,600 to 88,000, are being supplied by the International General Electric Co

Sub-Stations Along the Electrified Route.

Twelve sub-stations are being erected. One of these will contain three motor generator sets, seven will contain two sets, and the remaining four will each contain one set. The step-down transformers, lightning arresters and switches are being supplied by the International General Electric Co., and the contract for the balance of the plant in the sub-stations has been secured by the British Thomson-Houston Co

The transmission lines are being supplied by Messrs. Hubert Davies and Co., and the track structure is being built up in the country of Union materials by Messrs. Gilbert Hamer and Co. to the order of the British Insulated and Helsby Cables, Ltd.

A Bold Undertaking.

Such, in brief, are the outstanding features of the first large railway electrical enterprise in South Africa. The undertaking has its critics. Some contend that the money expended on the electrical scheme might better have been employed in double tracking the line; and in some quarters it is pointed out that in these days of democratic freedom, strikes and direct action, it is a somewhat dangerous procedure to have the whole control and driving power of a railway, or an important section of it, centred in one station. But to take the broader view, it is certain that this electrification project marks a distinct move forwards in railway enterprise in this country. Electric drive as opposed to steam has a tremendous amount to be said in its favour, and especially so in the case of a highly congested section such as that which is dealt with in this article. For these reasons, then, if for no other, the Railway Board, Sir Wm. Hoy and his Administrative Officers are to be congratulated on the bold forward step which they have taken, and the contractors are deserving of the highest praise for the expeditious and efficient manner in which constructional work is being carried out.

Explosives in Coal Mines.

Lieut. Col. G. R. Lane-Fox, the Imperial Secretary for Mines, gives notice that on April 13, 1923, he made an Order in pursuance of section 61 of the Coal Mines Act, 1911, adding to the First Schedule to the Explosives in Coal Mines Order of September, 1913 (relating to "permitted explosives") the explosive super-ammodyne, manufactured by the Cape Explosives Works, Ltd., at Somerset West, Cape Province, Union of South Africa. Super-ammodyne consists of the following mixture:—

Ingredients.	Parts by weight. Not more than	Parts by weight. Not less than
Nitro-glycerine	10	8
Nitrate of ammonium	71	68
Oxalate of ammonium	6	4
Wood meal (dried at 100 deg. C.)	8·5	6
Chloride of sodium	9	7
Moisture	2·5	–

It is provided that the explosive shall be used only when contained in a case of waxed paper thoroughly waterproofed with (a) a mixture of ceresine and resin, or (b) with paraffin wax; that the explosive shall be used only with a detonator or electric detonator of not less strength than that known as No. 6; and that the greatest weight of the explosive which may be used in any one shot hole shall not exceed 16 oz. The explosive must have been made at the works of the Cape Explosives Works, Ltd., at Somerset West, Cape Province, South Africa. Four oz. of super-ammodyne gave a swing of 2·80 in. to the ballistic pendulum, compared wth a swing of 3·27 in. given by 4 oz. of gelignite containing 60 per cent. of nitro-glycerine.

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The May Output in Detail.

Total Output for May	786,564 oz.
Increase on April	42,913 oz.
Witwatersrand Output	767,749 oz.
Increase on April	44,383 oz.
Outside Districts Output	18,815 oz.
Decrease on April	1,470 oz.
May Value	£3,480,545
Increase on April	£227,072

Individual Returns.

		Increase.	Decrease.
	Oz.	Oz.	Oz.
Aurora West	3,447	—	30
Brakpan	26,867	1,812	—
City Deep	41,201	3,043	—
Con. Main Reef	19,835	2,521	—
Crown Mines	69,911	2,712	—
Durban Roodepoort	10,969	—	428
Ferreira Deep	9,127	111	—
Geduld	22,375	3,788	—
Geldenhuis Deep	14,002	126	—
Knight Central	7,269	341	—
Luipaardsvlei	5,062	782	—
Meyer and Charlton	8,696	251	—
Modder B	32,803	101	—
Modder Deep	24,028	1,549	—
Modder East	11,763	585	—
New Goch	4,395	160	—
New Kleinfontein	10,830	292	—
New Modder	57,721	5,405	
Nourse	15,542	1,127	—
Randfontein	52,855	3,418	—
Robinson	3,696	235	—
Rose Deep	13,587	—	346
Springs	24,916	1,348	—
Van Ryn Estate	9,449	319	—
Van Ryn Deep	28,339	2,252	—
Village Deep	17,473	802	—
West Rand	10,066	470	—
Wit. Deep	12,456	—	23
Wolhuter	8,398	260	—
Simmer and Jack	14,366	—	89
Do. special declaration	1,702	1,702	—
Robinson Deep	24,899	1,488	—
E.R.P.M.	32,492	1,784	—
Government Areas	64,595	3,845	—
Langlaagte Estate and Con. Langlaagte	30,358	929	—
New Unified	2,422	—	7
New Primrose	4,735	331	—
Witwatersrand	12,028	509	—
Miscellaneous	3,047	908	—

Outside Districts.

		Increase.	Decrease.
Sub Nigel	5,799	141	—
Glynn's Lydenburg	1,350	—	62
Trans. G.M. Estates	5,736	63	—
Miscellaneous	5,930	—	1,612

Native Labour.

The returns supplied by the Witwatersrand Native Labour Association show the following results:—

	May.	April.
On gold mines	175,591	178,337
On coal mines	15,176	15,040
On diamond mines	2,668	1,860
Totals	193,435	195,237

May Output: Group Returns.

UNION CORPORATION GROUP.

Particulars of the operations of the companies of this group for the month of May, 1923:—

Company.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev.) Total
Geduld Proprietary	62;000	22,375	£98,974
Modder Deep	45,100	24,029	£105,677
Totals and averages .. .	107,100	46,404	£204,651

Company.	COSTS. Total.	per ton.	PROFIT. (including Sundry Rev.) Total.
Geduld Proprietary ..	£61,730	19 11	£37,244
Modder Deep	£40,205	17 10	£65,472
Totals and averages	£101,935	19 0	£102,716

The above results are arrived at by valuing gold at 88s. 6d. per fine ounce.

ANGLO-AMERICAN GROUP.

The following are the results of operations for the month of May, 1923:—

	Tons milled	Working Costs per ton milled s.	d.	Value of Gold Declared £	Yield per ton s.	d.
Brakpan ..	67,000	21	3·4	113,210	33	9·5
Springs	54,500	22	0·4	104,970	38	6·2
Totals and averages	121.500	21	7·5	£218,180	35	11·0

	Working Profit based on standard value of Gold Total £	per ton s.	d.	Estimated Premium taking gold at £4 8s 6 per fine oz. less Exchange on Remittances £	Total Estimated Profit £
Brakpan	41,892	12	6·1	2,262	44,154
Springs	44,919	16	5·8	2,102	47,021
Totals and averages	£86,811	14	3·5	£4,364	£91,175

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining Rand Mines group for the month of May, 1923:—

Company.	Tons Crushed	Yield in Fine Gold Oz.	Estimated Value.	Estimated Profit.	Estimated Working Cost per ton.
City Deep ...	96,000	41,200	£177,163	£64,913	23/ 1
Con. Main Rf.	54,500	19,835	85,062	15,276	25/ 7
Crown Mines .	220,000	69,911	300,617	78,652	20/ 2
Dur. Rood. Dp.	33,800	10,969	47,000	3,829	25/ 6
E.R.P.M. ...	134,000	32,492	139,714	76	20/10
Ferreira Deep	34,200	9,126	39,244	5,781	19/ 6
Geldenhuis Dp.	56,900	14,001	60,206	1,755	20/ 6
Knight Central	34,400	7,296	31,372	3,594	16/ 1
Modder B. ...	66,500	32,803	141,587	74,527	20/ 2
Modder East .	28,000	11,763	50,468	15,005	25/ 4
New Modder .	120,000	57,721	247,963	152,760	15/10
Nourse Mines .	49,300	15,542	66,832	9,311	23/ 4
Robinson	15,300	3,696	15,894	4,163	15/ 4
Rose Deep ...	57,400	13,587	58,425	9,888	16/10
Wolhuter	35,000	8,398	36,111	3,571	18/ 7
Village Deep .	58,000	17,473	75,133	11,481	21/11
Tls. & avgs.	1,093,300	365,813	1,572,791	454,585	20/ 5

*Loss.

GENERAL MINING AND FINANCE CORPORATION.

The May operations of the producing mines of this group were as follows:—

Company	Tons Crushed.	Total Cost.	Cost per ton s.	Total Revenue	Profit.
Aurora West	13,200	£12,676	19·21	£14,687	£2,011
Meyer & Charlton	15,400	16,401	21·30	37,484	21,083
New Goch	18,400	17,481	19·00	19,046	1,565
Van Ryn Estate	34,500	31,887	18·48	40,905	9,018
West Rand Con	36,800	39,601	21·52	43,651	4,050
	118,300	£118,046	19·96	£155,773	£37,727

In calculating the revenue, gold has been taken at a value of 88s. 6d. per fine ounce, less estimated realisation charges.

TRANSVAAL SILVERS.

The output of this company for May totalled 386·34 long tons of lead bullion, containing 38,728 ozs. of fine silver, representing a total value, based on the latest quotations for the metals, of approximately £14,869.

WITWATERSRAND DEEP.

The estimate of results for the month of May, 1923, is as under:—Tons milled, 47,050; gold recovered, 12,455·946 ozs.; average of stamps running, 180; stamps running time, 26·962 days; tube mills, 5. The working expenditure, including head office charges, for the month is £44,834, or 19s. 1d. per ton. The estimated working revenue, based on an estimate of £4 8s. 6d. per fine oz. (less 2s. 6d. realisation charges), is £53,515, or 22s. 9d. per ton. The net estimated workig profit is £8,681, or 3s. 8d. per ton, from which is to be deducted the capital expenditure for the month of £848, leaving a surplus of £7,833. The reduced profit this month is due to preparation for an active development policy. A number of faces in the lower and richer section of the mine have been stopped, and the majority of the ore is now being got from the upper levels. This ore, being of lower grade, naturally gives a lower revenue, and consequently lower profits. The reduction of profit, however, should be only temporary.

TRANSVAAL GOLD MINING ESTATES.

The following are the particulars of the output for the month of May, 1923:—Central Mines: Tons crushed, 12,000, yielding 3,961 fine ozs. Elandsdrift Mine: Tons crushed, 1,880, yielding 1,072 fine ozs. Vaalhoek Mines: Tons crushed, 2,000, yielding 703 fine ozs. Estimated value of month's output, £24,580; estimated profit for the month, £1,400. The gold output for the month is valued at £4 5s. 9d. per fine oz. net, after allowing for exchange and realisation charges.

ZAAIPLAATS TIN.

The results for the month of May, 1923, are as follows: The output for the month, including tributors, was 28 long tons, averaging approximately 73 per cent. metallic tin. The estimated profit for the month, on a basis of £200 for metal, was £2,113. The outlook for June is satisfactory.

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"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal is now visiting Natal and Rhodesia with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

E.R.P.M. Co., Ltd.

The Minister for Mines and Industries has informed the Board of the E.R.P.M. that the Government is unable to accede to the application of the company.

* * *

Anglo-French Exploration.

The report of the Anglo-French Exploration Company for 1922 states that the directors have realised certain of the company's holdings which occasioned losses on book cost amounting to £27,800. Incidence of loss due to these realisations in a poor year has resulted in a debit balance in the profit and loss account. The position of the company has, however, much improved, the valuation of its assets as a whole showing very substantial appreciation. The directors are glad to be able to state that further considerable improvement has taken place since the end of the year, both as regards realised profits and value of assets. While it is not possible to pay a dividend in respect of this year, the Board has decided to declare an interim dividend of 5 per cent. on account of the current year, payable about 31st May, subject to tax. The cash position is very satisfactory, net cash assets amounting to £141,000. The accounts show net realised loss of £10,401, after payment of interest on debentures and writing off realised losses referred to above. This amount is placed to debit of appropriation account, together with £10,011 written off for depreciation, and leaves a balance to credit of that account of £18,133. The customary valuation of assets made by the directors at the end of the year, when the net value amounted to £720,711, showed a surplus of £25,711, compared with a deficiency of £65,500 at the end of the previous year. The surplus at the end of April last was over £90,000

* * *

The Business Position.

In its report for May, the Standard Bank states: Recent reports from the larger centres of the Union indicate that the improvement in trade conditions during the first quarter of the year, and continued through April, has been maintained during the present month, and there is a tendency for prices to harden. The wholesale trade, always a very delicate index of business conditions, is showing signs of gradual improvement, and in the settlement of accounts some improvement is reported. Greater activity is shown in some lines of business, e.g., the soft goods trade, but this is possibly due to weather conditions, and much headway must be made before conditions are back to normal. Furniture and boot factories are busy, while the building and allied industries continue very brisk. During April, the City Engineer's Department of Capetown passed 192 building plans, valued at £107,535. In the engineering industries, a distinct improvement is noticeable. More skilled men were employed during April than for many months past, and the outlook is decidedly brighter. The cost of living figures shows an upward tendency, due, no doubt, to a firmer demand, and to new duties and indirect taxes. Sugar has advanced 1d. per lb., and tea is likely to become dearer. As far as Capetown business houses are concerned, country travellers are sending in larger orders, and retailers report a further slight improvement.

* * *

Bright Prospects for Copper.

Speaking at the half-yearly meeting of the Wallaroo and Moonta Mining and Smelting Company, Limited, on 28th March, the Chairman (Sir Lancelot Stirling) expressed the opinion that prospects for copper were brighter. He said that the company hoped that it might be able during the next year to present a brighter financial position. There had been a satisfactory improvement in the copper market since the early part of the year, and there now appeared more justification than there had been for a long time past for expecting an upward trend, or, at least, a sustained demand at current prices. Sir Lancelot Stirling added that the principal source of strength lay in the United States, where the domestic demand had apparently been exceedingly good, and the consumption was said to be keeping pace with the production. Most of the stock of marketable copper existing at the end of 1922 had been sold for delivery in the first quarter of 1923. The current consumption was in excess of the current production. The opinion was general that copper was in a strong and stable position. The company intended to increase the rate of pay, as the market showed definite signs of taking on a firmer tone, and it was decided to pay an additional 6d. per day for so long as standard copper averaged £70 per ton or over for the calendar month, and a further 6d. per day for so long as the monthly price averaged £75 per ton or over

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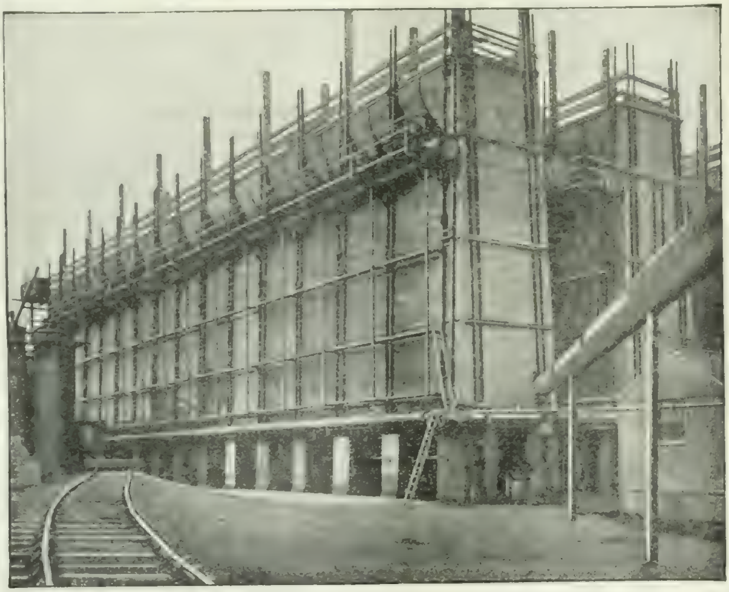

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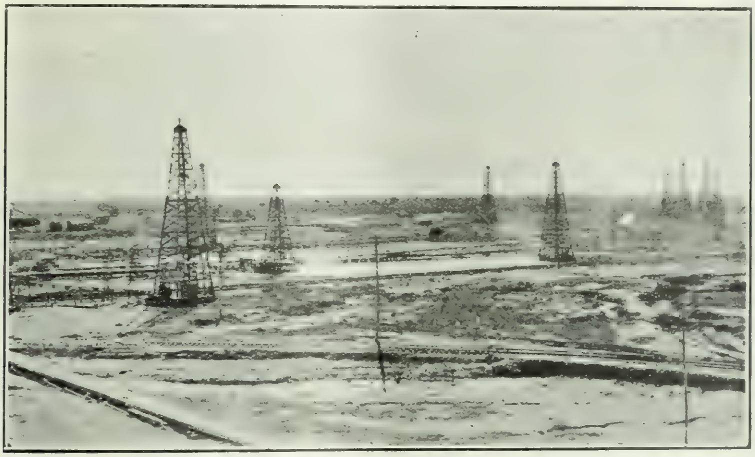
The Sulphur Industry of Texas.

SKETCH OF THE DEVELOPMENT OF A GREAT INDUSTRY—MANUFACTURE OF SULPHURIC ACID CONSUMES GREATEST AMOUNTS OF SULPHUR.

Sulphur, one of the most widely used elements found free in nature, a part of a vast number of common manufactured articles or a necessary reagent in their production, essential to almost every industry in the complex organisation of our modern civilisation, is a substance about which the average person has only a meagre and hazy knowledge. Ask ten persons where sulphur comes from, and at least nine of them will reply, "from volcanoes," or "from Italy," and ask the same ten what are the chief uses of sulphur, and more than likely all will say, "matches, medicine, and fumigating."

First American Sulphur Companies Encountered Many Difficulties.

The first discovery of a large deposit of sulphur in the United States was made at Sulphur, Calcasieu Parish, La., in 1869, by the Louisiana Petroleum and Coal Oil Co. in boring for oil. From that time until 1892 many attempts were made by shaft sinking to reach the sulphur, which lay 500 to 600 ft. below the surface and was overlaid by thick beds of quicksand. Some of the companies which engaged in this work were the Calcasieu Sulphur and Mining Co., the Louisiana Sulphur and Mining Co., and the American Sulphur Co. All attempts were failures, because of the insurmountable difficulties presented by the quicksand and poisonous gases, the latter taking a toll of five lives in the last effort to extract the mineral by direct means.



The Sulphur Fields of Texas.

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WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

About the time that it appeared impossible to mine the sulphur from this wonderfully rich deposit, Herman Frasch, a chemist for the Standard Oil Co., took up the study of the problem, conceived the idea of melting the sulphur in place by means of superheated water, and obtained his first patent in 1891. Frasch organised the Union Sulphur Co., and after overcoming many obstacles, including a misunderstanding of the very nature of the sulphur deposit he intended to work, and the drilling of several wells in barren territory, the first well was tested in January, 1895, and a little sulphur was brought to the surface. During 1896 a production of two or three thousand tons was made, and the total output up to 1898 was only 4,500 tons.

Use of Fuel Oil Made Frasch Process Practicable.

Although the process was technically a success, the high cost of fuel (coal from Alabama) used in heating the water threatened commercial failure. Opportunely, in 1901 Captain A. F. Lucas discovered a great source of cheap fuel in the crude oil of the Spindle Top field, near Beaumont, Tex., and once more the Union Sulphur Co. began operations. The first production of note was made in 1903, when 23,715 tons was extracted. The production of the Union Sulphur Co. since then is shown in the following table:—

	Tons.		Tons.
1903	23,715	1911	204,220
1904 . .	79,187	1912	786,605
1905	218,950	1913	478,565
1906	287,590	1914	804,470
1907	185,882	1915	379,885
1908	367,896	1916	383,465
1909	270,725	1917	575,130
1910	246,510	1918	978,700

Previous to the large scale production from coastal deposits, Sicily was the largest producer in the world, followed by Japan. A few figures show clearly what happened to the Sicilian sulphur trade. The total exports from Sicily to the whole world fell off from 450,917 metric tons in 1912 to 136,991 metric tons in 1919, and to the United States from about 200,000 long tons in 1903 to practically nothing in 1919.

Sicilian Competition Eliminated.

For about ten years prior to 1906 nearly all the sulphur mined in Sicily was handled by the Anglo-Sicilian Sulphur Co., a British corporation which at one time controlled the sulphur market of the world. When in 1906 the agreement was about to expire, the Italian Government sent a commission to the United States to investigate the American sulphur industry, which was making such inroads upon its cherished monopoly. Baldacci, an engineer, reported that Louisiana sulphur could be produced for 18 lire and sold anywhere in the United States for 40 lire, whereas the Sicilian mineral sold for 80 lire at the place of storage and 125 lire in the United States.

In a final and frantic effort to withstand American competition, the Italian Government passed a law August 1, 1906, forcing all producers of sulphur in Sicily into a "Consorzio" for a period of twelve years, to sell sulphur for the common account of its members. An ultimatum was sent to the Union Sulphur Co. to keep its product out of European markets, and upon refusal the Sicilian trust attempted to "dump" sulphur upon the American market. This move was met by the Louisiana Company in a reduction of price from $22 to $19 per ton, which the foreign organisation could not meet, and practically no more Sicilian sulphur was shipped to America.

Captain Lucas not only was the first to discover oil in the coastal salt-dome formations, but was the first to drill at Bryan Mound, Brazoria County, Tex., where he discovered a large deposit of sulphur in a formation similar to that at Sulphur, La. This work was done for the J. M. Guffey Petroleum Co. No oil, at least none in commercial quantity, was found, and no attempt was made at that time to mine the sulphur. Later, E. F. Simms, of Houlston, Tex., obtained an option to purchase the ground.

Frasch Patents Expired in 1908.

In 1908 the Frasch patents, under which the Union Sulphur Co. operated, expired, and the practical monopoly of the sulphur business in the U.S.A. enjoyed by that company legally expired with them. It was not until 1911, however, that steps were taken to form a company to work the Bryan Mound deposit. A little later, July, 1912, the Freeport Sulphur Co. was organised, and on September 30, 1913, the Freeport Texas Co., the holding company of the Freeport Sulphur Co. and allied interests, was chartered.

The first plant of the Freeport Sulphur Co. pumped sulphur on April 18, 1912, but no substantial amounts were extracted until 1916. In 1917 the maximum production was made, more than half a million tons. In 1921 the steaming plants were all shut down on account of the general business depression.

Big Hill, Matagorda County, was one of the domes drilled immediately after the discovery of oil at Spindle Top, and oil and gas were found. This stimulated drilling, and between 1901 and 1904 oil was produced, variously estimated between 200,000 and 500,000 bbl. Though the oil field was soon exhausted, sufficient evidences of sulphur were found to cause the organisation in later years of a sulphur company to explore this deposit. The first company, known as the Gulf Sulphur Co., was formed in December, 1909, after test drilling had proved to the promoters that a sufficiently large sulphur deposit existed to insure the sucess of the enterprise. For the next few years this company was practically dormant except for the purchase of land. In 1916 a new drilling campaign was started, and in less than two years from the beginning of this operation a sulphur deposit containing over 10,000,000 tons had been developed.

Texas Gulf the World's Largest Producer.

In July, 1918, the Texas Gulf Sulphur Co., the present operating company, was organised, construction was started in August, 1918, and with the aid of priority rights from the Government on account of the demand for sulphur for war purposes, the plant was completed and the first sulphur produced in March, 1919. The steam-boiler plant of 10,000 h.p. was considered of sufficient capacity to produce 1,000 tons of sulphur daily, but more than this was made during 1919, and a total of over 800,000 long tons in 1920. The present production is over 3,000 tons daily, making this the largest sulphur-mining company in the world.

NEW CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs for the month of May, 1923, of the above-mentioned companies of the New Consolidated Gold Fields Group:—

Company	Stamps Running.	Tube Mills Working.	Tons Crushed.	Gold Declared. Fine ozs.	Total Profit Declared, including Sundry Revenue.
Simmer and Jack	320	7	68,000	14,366	£3,522
Robinson Deep	180	10	76,600	24,899	39,013
Sub Nigel	30	2	9,400	5,799	6,115
Totals	530	19	154,000	45,064	£48,650

The revenue derived from gold for the month of May is calculated at the rate of £4 8s. 6d. per fine oz., less estimated gold realisation and exchange charges of 2s. 6d., or a net figure of £4 6s. per fine oz.

Simmer and Jack Proprietary Mines.—In addition to above, 1,702 ounces of fine gold were recovered from tube mill plates, which have been replaced by corduroy tables.

Total gold in reserve (fine ounces): Simmer and Jack, 213; Robinson Deep, 3,316; Sub Nigel, 1,775.

Eloquent Banking Figures.

The usual quarterly statements of the five banks trading in the Union, as at March 31st last, are published in the *Government Gazette*. As regards deposits, there is a reduction of £3,561,918, compared with the figures of September 30th, 1922. The figures for the six-monthly periods from September 30th, 1921, are as follows:—September 30, 1921, total deposits, £90,747,977; March 31, 1922, total deposits, £88,994,066; September 30, 1922, total deposits, £86,502,557; March 31, 1923, total deposits, £82,940,639. It will be observed that there has been a steady falling off in the total deposits since September 30, 1921, the net decrease being £7,807,338. Advances during the same period, and the ratio which they bear to deposits, are given in the following statement:—September 30, 1921: Total advances, £75,371,669; percentage of deposits, 83. March 31, 1922: Total advances, £71,619,531; percentage of deposits, 80. September 30, 1922: Total advances, £67,023,366; percentage of deposits, 77·4. March 31, 1923: Total advances, £60,239,004; percentage of deposits, 72·6. There has been a steady reduction in advances since September 30, 1921, the net contraction during the period being £15,132,665. It will thus be seen that concurrently with the steady decline in deposits, there has been a very considerably greater decrease in advances. The decrease in advances during the last six months was £6,784,362. The ratio of advances to deposits has fallen from 77·4 per cent. on September 30, 1922, to 72·6 per cent. on March 31 last. The figures demonstrate a great contraction in business since September, 1921.

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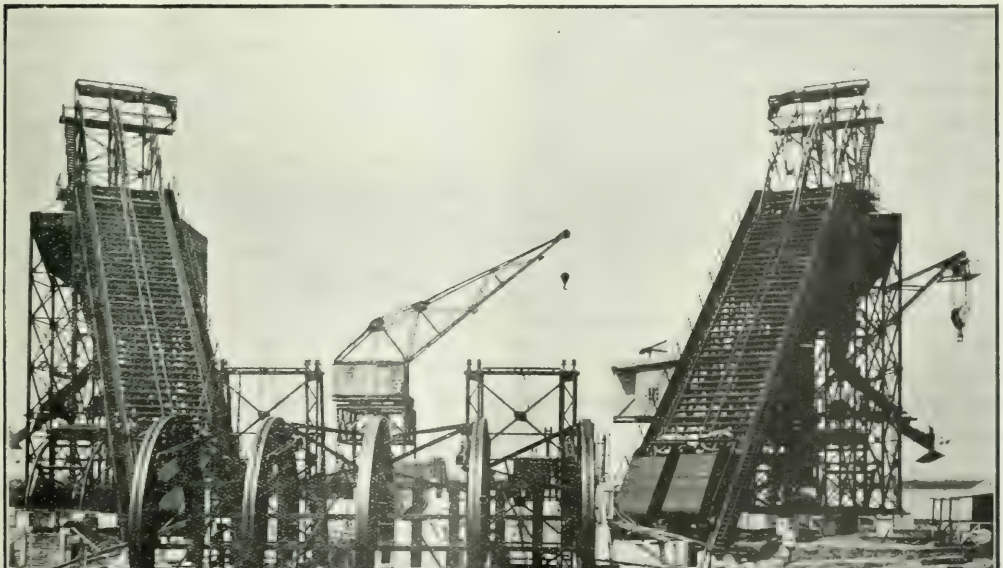
The Delagoa Bay Coaling Plant.

OFFICIAL OPENING OF NEW PLANT—SOME OF THE PRINCIPAL FEATURES.

Last Sunday forenoon the new coaling plant at Delagoa Bay was officially opened by the Acting Governor-General. The plant, of course, had been thoroughly tested before, and everything went without a hitch.

We have on several occasions described the mechanical features of the plant, so that they need not now be reiterated.

THE COALING PLANT AT DELAGOA BAY.



The above photo was specially taken for the " S.A.M. & E.J."

The electrical supply for the coaling plant is direct current from 500 to 550 volts. The rotary tippler of the Provay patented type is operated by means of a 21 h.p. motor through gearing and wire ropes. When it is considered that even the largest type of truck used by the South African Railways can be tippled with this plant, it will be noticed what an extremely small amount of energy is required for the duty. The four main skips for delivering coal from the tippler bins to the bins which feed into the main buckets operate in pairs. Each pair of skips is operated through gearing and wire ropes from a 105 h.p. motor. The special feature of the electrical control gear for the skip hoist motors is that the acceleration and deceleration periods are automatically controlled and not left to the discretion of the driver. Starting from the position of rest with the skip at the bottom filled with coal, the driver has only to move over a small and light control lever which brings into operation the first of a set of electrical contactors, which in turn operates other electrical contactors, cutting out resistance in the armature circuit of the motor until the motor has attained full speed. This cycle continues until all the resistance is cut out of the armature circuit of the motor and the motor operates at full speed until a predetermined point is reached, when the first of a series of limit switches is automatically operated. When the first limit switch is operated, the circuit, through one of the operating coils of the contactor gear, is broken, which opens one of the electrical contactors, by which means all the starting resistance is connected in the circuit with the motor, reducing the speed of the motor very considerably. The second limit switch which is automatically operated is of the closing type, which closes the circuit of the electrical contactors inserting resistance in shunt with the armature of the motor thus diverting a portion of the armature current, still further reducing the speed of the motor. The third limit switch is also of the closing type, which closes the circuit of another of the electrical contactors, which reduces the resistance shunted across the armature of the motor, which still further reduces the speed of the motor. The fourth limit switch is of the opening type which breaks the circuit of one of the operating coils of the electrical contactor gear whereby the brake is applied, after which auxiliary circuits are opened, which operate through the electrical contactor gear entirely cutting off the electrical supply from the motor. During the trial runs the whole of this equipment has proved to be most satisfactory as regards the control of the main skip motors, both during the acceleration and deceleration periods. The whole of the electrical equipment has been supplied by the Metropolitan Vickers Electrical Company, who have works at Trafford Park and Sheffield, England. Some of the smaller items were supplied from local stocks, but the main hoist motors with their special control gear were sent out from the works of the Metropolitan-Vickers Electrical Company at very short notice. The control gear is of a type which has been very largely used by the Metropolitan-Vickers Electrical Company in connection with work they have previously carried out with the firm of Messrs. Head, Wrightson & Co., Ltd., for such classes of work as furnace charging equipments, etc.

The Romance of Shipping Machinery Oversea.

By C. M. RIPLEY, of the General Electric Company, Schenectady, N.Y., U.S.A.

The romantic adventures of electrical machinery, in travels through apparently inaccessible parts of the globe, and the dangers to which it is exposed, form in themselves an interesting chapter in the history of commerce, and have been a constant challenge to the ingenuity and persistence of shippers.

Chief among the enemies of such machinery is rust, air moisture producing it even when the machinery parts are perfectly protected from rain and storm. In the case of a motor hermetically enclosed in a zinc tank and soldered tight, the tank was found, when opened two years later, to contain three quarts of water.

Apparently, due to jarring and vibration, some little crack or pinhole had opened and the box had begun to "breathe." The dampness condensed against the cold machinery, and in the daytime when the temperature rose the box would breathe out dry air. Thus with the rising and setting of the sun, moisture was carried into the box that was thought to be hermetically sealed.

The shipping experts were baffled until an electrical engineer suggested that "breathing holes" be provided to keep the temperature inside the box the same as outside. The shipping department conducted many experiments, and a method was developed which solved the problem. The great generators for London underground railroad were delivered free of rust. But a new enemy had attacked. The mice on shipboard had taken advantage of the breathing holes in the boxes, and had eaten the insulation on some copper wire. From that time on a wire screen or netting was tacked on the inside of each hole.

Entirely different arrangements must be made for shipping electrical apparatus to South America from those made for sending it to India, France and Alaska.

Machines for the west coast of South America must often be "dismembered" into numerous small packages of comparatively light weight to facilitate landing. A burro cannot carry up into the Andes Mountains a package weighing over 170 pounds in weight, and a mule's limit is 350 pounds; so the machines must be "knocked down" before being sent on their long and arduous journey.

Safe delivery of electrical machinery by railroad to New York, by boat to South America and from the boat by lighters or canoes to the port of destination requires careful preparation. When canoes are used, they are paddled as close as possible to shore and then the boxes or packages are tossed into the surf. They are then dragged ashore and trucked to a railroad station and begin a journey of two or three or four days, probably on an open or flat car to the end of the line near the foot of the mountain; then four days more in an open boat, with Indians or peons as pilots. After the river ceases to be navigable, the motors and generators are loaded on the backs of mules for their long journey up the narrow, winding paths of the mountains.

Nor is the Indian always careful to lower the packages of precious machinery gently from the mule's back to the ground. He is probably as tired as the mule and merely loosens the strap, allowing the box to fall to the ground.

The machinery meanwhile has been carried through salt water, has risen from sea level in a tropic land to the snow-capped mountains, and after arriving at the location of the power house is likely to be left lying on the ground for months before the engineers are ready to unpack it. But specialists in shipping have learned how to pack the machinery to defy breakage, rain, and moisture, and they can guarantee in advance that the machinery will operate without a hitch.

In India crude trucks drawn by teams of oxen carry loads as heavy as three to five tons, while the elephants can haul ten tons. In a recent installation of machinery in India, a whole year passed before the apparatus could be carried 250 miles into the interior by elephants.

But when it did arrive the natives organised committees of welcome, with musical instruments, to meet the engineers; for the story had been spread that the engineers were to introduce that weird god of lightning which would lighten labour and pierce the night of the wilderness country in the Himalaya mountains.

In India, just as in South America, the jarring of loading and unloading must be guarded against; besides this, there is a different enemy of electrical machinery, who is most formidable, although he is only three-quarters of an inch long. This enemy is the dreaded "termite."

If a box of machinery were left overnight unprotected, the next morning there would probably be nothing remaining of the entire shipment but the bare metal. The termite is an insect which feeds chiefly on wood and does not leave even sawdust after he has completed his meal. On one occasion a row of telegraph poles was completely eaten down by these termites, and in forty-eight hours nothing was left but the wires and the glass insulators lying on the ground.

Engineers have found that there are only three things which resist attack by this insect—stone, metal and tar. So all boxes that are sent to this section of India must be saturated with coal tar, as are the roofs of the local buildings.

On the journey to the Himalaya mountains, where the water power was being developed by machinery, many of the bridges had to be rebuilt in order to carry the heavy loads, the equal of which had never before passed into the heart of that country.

Under opposite conditions are the dog sledges of Alaska. Electricity is needed in the frigid zones as well as in the torrid, and the dog sled of the Eskimo is the accepted means of transportation. In this case a thousand pounds is the limit of each package in order that they may be effectively handled by a standard "dog-train."

So careful is the shipping expert to meet the peculiar local conditions of the dog sledges that special horns are provided on each package to assist the Eskimo in lashing it to the sleds.

The art of shipping, however, has followed the development of the electrical industry itself. When the first turbine was built in 1902, to be shipped to Chicago, it caused great perturbation in shipping departments. Two railroad cars were broken in attempting to load one of the cases; the railroad company deliberated for a week before deciding that it could transport the turbine to Chicago, and a special train requiring an extra expense of $1,000, in addition to the regular freight charges, was necessary to get this piece of apparatus to its destination. Now turbines of 50,000 k.w. capacity—over 60,000 horse power—instead of merely 6,000 k.w. as a maximum are being shipped as a matter of course

INDUSTRIES SECTION.

Frozen Fowl for the World's Markets.

PACKING INDUSTRY MAKES A PROMISING START—S.A. POULTRY FOR THE EMPIRE EXHIBITION—BIG PROSPECTS FOR COLD STORAGE PLANTS—A CHANCE FOR BRITISH ENTERPRISE.

It has sometimes been predicted that Johannesburg may become a second Chicago. From some points of view this may not be a very alluring prospect, but Johannesburg has time to take warning and avoid some of the more pronounced failings of its Transatlantic pattern and prototype and emulate only its prosperity and enterprise. The particular direction in which it has been suggested that Johannesburg might follow a parallel development to the American city is in connection with the preparation of food for export.

It is not proposed to deal here with the meat trade, but a very promising beginning has been made in a less ambitious sphere, though one of enormous possibilities—the packing of poultry for the overseas markets. It is only in the last year or so that these possibilities have been realised, and even to-day only one or two far-seeing firms and co-operative enterprises are seriously tackling the business as a commercial proposition. For the most part the rearing of chickens and the production of eggs is still regarded as a negligible side-line of the farm, yielding perhaps a little pin money for the farmer's womenfolk.

But properly handled, the business could in a very short period bring such prosperity not only to the actual producers of poultry, but to manufacturers and importers of the plant and appliances that would be called for when this "packing" industry assumed considerable proportions; in fact it can only attain those proportions with the aid of modern equipment, and the opportunity and the reward will thus be a mutual concern of the poultry growers, the packers, and exporters, and the manufacturers of appliances needed in all the processes of the industry from the hatching out of the young chick to its frozen passage to the consumer.

It is interesting to note that during the last dozen years the production of poultry in the Union has remained either stationary or diminished. Of fowls, for instance, the "census" has remained in the neighbourhood of 9¼ millions; ducks have decreased from 612,000 to 356,000; geese from 271,000 to 216,000, and turkeys from 268,000 to 235,000. The export of poultry, on the other hand, though a comparatively small proportion of the total production, has more than trebled in twelve months—from 39,179 lbs., valued at £2,595, in 1921, to 124,238 lbs., valued at £6,445, last year.

To Messrs. John Layton & Co., Ltd., of Johannesburg, belongs the credit of playing the not always profitable part of pioneers in the development of this industry. They brought out from England chickens packed in America in order to show the packers here exactly "how it was done." As a result of that experiment, one firm in Johannesburg exported 3,000 turkeys and 20,000 chickens last year, and the prices realised in London were only a fraction under the American prices ruling at that time. This initial success should prove that South African poultry can hold its own on the London market, and there is the added advantage that South African turkeys can be put on the London market when the English birds are scarcely hatched out; they are, as a matter of fact, being packed during this month and next. Last year's turkeys from this country were actually re-shipped from England to America because there was a shortage in that country.

A Critical Year.

But this will be a critical year for the South African poultry exporter. Many growers in areas that were devastated during the war are now established again, and will be found to be serious competitors on the London market. If South African produce can this year hold its own against the poultry from China, Argentine, Russia and Austria and other exporters within a few days' journey of London, the success of this new industry may be said to be assured. That is, of course, assuming that the growers pay a little more attention to the feeding and rearing of the birds than they have been accustomed to do in the past. The production of poultry must be tackled as a serious and profitable business in itself, and care taken that only first grade birds are sent to the packers.

The packing industry will become a specialised one, for much depends upon the condition in which the birds reach the London market, and this in turn depends upon the skill of the packer and the efficiency of his materials and appliances. It has been found that South African wood is not suitable for the packing cases, and it pays to import Swedish material because of its combined lightness and strength, which, of course, in the aggregate represents a substantial saving in rail and shipping freights. Everything depends upon the cost at which the birds can be supplied to the packers and the care they exercise. South Africa offers

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with [illegible] advantage, poultry were [illegible], and in this they will certainly not be disappointed. Provided they are well fed, everything else can be left to the packers. [illegible] as they arrive, the birds are speedily killed, plucked, frozen and shipped to the coast in refrigerator trucks and transferred to the ships' refrigerating chambers.

America Again to the Fore!

Incidentally, it is interesting, and a little disconcerting to British pride, to find that up to the present American refrigeration have obtained a decided preference in this new but rapidly growing industry. It is said by those engaged in it that the British makers have not studied the South African climatic conditions so carefully as their American competitors appear to have done, and the American appliances can be relied upon to show less variation in temperature. We do not, of course, identify ourselves with these opinions, but give them for the consideration and possible stimulation of the British makers.

The fact is, as one representative of a British firm admitted when discussing this question, that cold storage problems in this country have scarcely been seriously tackled by the British makers, and in defence of this neglect it was asserted that their agents in South Africa could not send home to their principals more than an isolated order every year or two. The Americans have apparently been a little more alive in anticipating South African developments in this direction, and have already reaped the first fruits. It must not, of course, be assumed that refrigerating plant in this country is exclusively American; there are some few fairly considerable British installations, but it is admitted that these are in a decided minority.

It is once again a case of the British firms assuming that South Africa is "not ready." This is a mistaken attitude, and a little more assiduous cultivation of a potential market might be found a wiser policy. The development of the poultry export industry, for example, is a case in which the producers and packers might be materially helped by the co-operation of the makers of the appliances that will be used as the industry grows, and the packers and others engaged in the industry will naturally have a sympathetic interest in the firms who had come to their assistance in the early stages of the business. Too often the British firms wait until an industry is established and then step in, fully expecting to "reap where they have not sown."

Empire Exhibition Opportunity

Reverting to the more immediate prospects of the poultry exporting industry, it is interesting to learn that a determined effort is to be made to obtain for South Africa the contract for the supply of the whole of the poultry required by the Empire Exhibition catering departments next year. This is a fairly ambitious venture for an industry at so early a stage of development, but it illustrates the enterprise that is behind it, for those responsible recognise that success in this effort would give South African poultry a " boost " that would be of incalculable advantage. The steamship companies have given evidence of their sympathetic interest in the development of this industry. Suitable cold storage is provided, and the Union-Castle Company no longer carries supplies of English poultry sufficient to last the round trip, but for the homeward voyage purchases South African poultry and eggs.

Pioneer Propaganda.

One of the greatest difficulties the packers have so far experienced is the education of the farmers to a realisation of the enormous possibilities latent in the humble and hitherto despised fowl, and the almost equally neglected turkey which has been allowed to roam about the farms and "forage" for its own food. Mr Tollman, of the firm of Messrs. Tollman Bros. & Davis, who were among the first to realise these possibilities, sent out no fewer than 10000 circulars to farmers last year explaining what class of birds were wanted for the export trade and the best time to send them in to the packers. The Union Government has, of course, given considerable attention to this matter, and the Railways Department has proved a very sympathetic and helpful coadjutor; poultry societies and competitions have also stimulated interest, and Mr. Gishford, of Messrs. John Layton & Co., has carried through much useful propaganda in the way of lectures. All these influences are having some effect, and there is now a more regular supply of better quality birds.

The turkey season is just now commencing, and some busy scenes can be witnessed in the killing, plucking and packing sheds at Messrs. Tollman's Newtown factory. Although the export business has been seriously tackled only during the last few years, extensions of the premises have already been necessitated, and an additional refrigerator room is approaching completion. This, it may be mentioned, is a somewhat costly item of the equipment, the insulation of the walls of the comparatively small chamber alone costing £500. The most up-to-date refrigerating plant is installed. Mr Tollman's experience is that the American machines are more compact, but yet more powerful and efficient and cheaper to run than the British makes. Possibly the British makers may bestir themselves to remove this reproach now it is seen that the poultry-packing industry has come to stay and is showing the makings of a big business.

More Profitable Than Pig.

Up to the present it has certainly been a struggle for the few firms who have engaged in it as pioneers, but once the South African farmer realises that there is money in it he will doubtless devote more attention to his poultry. As Mr Tollman pointed out to the representative of the "S.A. Mining and Engineering Journal," the favoured pig has a lot more attention paid to him and yet when marketed realises anything from 4d. to 7d. per lb., while the turkey, running about the farmyard almost wild and costing practically nothing for food, will sell at 8d. or 9d per lb. The country, climatically and in other respects, is particularly suited to the rearing of turkeys and poultry generally, and if the farmers will supply the birds, "we will do the rest," said Mr. Tollman, speaking, of course, for his own and other firms engaged in this packing and export business. Evidence of the suitability of the South African climatic and other conditions is furnished by the success Messrs. Tollmon Bros. & Davis achieved at the competition promoted by the Union Government in 1920, when the Johannesburg firm was awarded the gold medal in competition with Canadian and Australian rivals, who have half a century's experience in the poultry trade behind them.

Mr. Tollman is looking forward to a successful season this year. The heavy mealie crop, an abundance of grass following the heavy rains, and finally the visitation of locusts, on which the turkeys feed voraciously, are all favourable factors; and although there is now keen competition on the overseas markets, South African producers can, he is confident, hold their own, provided the farmers will send along the right sort of birds. To the fowls and turkeys, which have hitherto formed the great bulk of the export business, guinea fowls are now added, and these are finding a ready market in London.

Incidentally, the development of the poultry export business has given a start to another new industry; there is now plentiful local supply of feathers for the makers of pillows, etc., who in the past had to import their "raw material."

The export of eggs does not present quite so formidable a problem as that of poultry, but at present it represents a greater value, and this industry has made rapid growth. Twelve years ago fifteen million eggs were annually imported into South Africa, to the value of over £55,000. The Union is now not only able to furnish its own supply, but is in a position to export eggs to other countries, and last year over 18,000,000 were sent overseas, to the value of £118,000.

PERSONAL.

Mr T. G. Ottley, of the V.F.P., has returned to the Rand.

* * *

Mr D. Christophersen has left the Rand for England.

* * *

Mr F. R. Lynch sailed this week on the Walmer Castle.

The Prospects of the South African Chemical Industries.

By W. G. Weaver, M.Am.Soc.M.E., University of Capetown.

A number of excellent descriptions of the more important chemical works in the Union were published in the SOUTH AFRICAN MINING AND ENGINEERING JOURNAL some time ago (April 15th, 1922), which must have considerably impressed many people not already familiar with the efforts being made to establish certain substantial chemical industries in this country. The articles made it quite clear that the industrial development of South Africa had already begun, and it is common knowledge that each of these works is ready and even anxious to launch some further really important undertakings as soon as the railway rates on heavy goods traffic are reduced to a reasonable figure and something definite is done to prevent the unfair dumping of foreign products. There is little doubt that these works are destined to become important centres for the manufacture of a large number of chemical products, but, at present, the South African Railways charge more to bring a bag of South African cement from Piquetberg to Capetown than the shipping companies charge to bring a similar bag from Europe, and it is well known that commodities are often put on the South African market at a lower price than that quoted in the country of their origin, with the object of closing down local works.

The authorities have recently given some consideration to dumping, more particularly in the case of the cement and fertiliser industries, and they have also agreed to assist the iron and steel industry on condition that the works produce at least 50,000 tons per annum, so that it may be possible before long that they will favourably consider the reduction of the present excessive railway rates on raw materials.

The Cape Explosive and Fertiliser Works.

Some idea of what the existing factories are prepared to do may be gathered from the description of the new fertiliser plant at Somerset West, C.P. The management there has evidently fully realised what so many people in South Africa fail to understand; that is, that a low selling price for a high class product is only possible when the process is carried out on a large scale, and even then only when the plant is continually employed. The Cape Explosives Works, Ltd., have put down a plant equal in size and efficiency to anything else to be seen in any other part of the world, and working costs therefore compare most favourably with concerns elsewhere. The South African farmer is now able to get a first class fertiliser at a reasonable price, and the country as a whole benefits since the export trade finds a considerable amount of employment and must cause a considerable amount of money to flow *into* the country. When the plant mentioned above is running up to its full capacity it turns out 180,000 tons of superphosphate per annum, of which only 60,000 tons are required in the Union itself. As in many other cases a good proportion of the product must be exported, as the demand in the Union is not sufficient to keep a works, which is large enough to be an economical one, going all the year round.

One thing in favour of all new enterprise in South Africa is that it is able to profit by the mistakes of older manufacturers in other countries. For instance, the details of many important chemical processes are comparatively simple and are quite well known, so that it is possible to work them out in full before making any attempt at actual production. In older plants the process has often not been properly investigated beforehand, and experimentation and alteration have been allowed to go on side by side with production for the market. If the process was a good one the plant simply grew and odd sections might be purchased locally from time to time and adapted by the foreman mechanic. From an engineering point of view the whole works, built in this way, was often highly inefficient, and when larger production was asked for and an attempt was made to press the extemporised plant, trouble would break out first in one place and then in another. Frequently the raw material had to pass through a "bottle neck," and any trouble there meant stopping the whole works. In new works which have been planned to give a definite output nothing of this sort should occur, and provision can always be made for future extension.

Opportunities for the Chemical Engineer.

Another point of real importance is that the new South African chemical industries are now able to avail themselves of the services of a number of young South Africans who have been trained as industrial chemists and chemical engineers in the Universities. As regards the latter profession, it is essentially modern and quite distinct from that of the industrial chemist. It has been called into being by the continued increase in the scale upon which the more common chemicals are manufactured and, as a matter of fact, the engineering side almost predominates in some instances. In all large works the services of a first class chemical engineer are as essential to the commercial success of the plant as those of any other class of employee, but it used to be the universal practice in Great Britain before the Great War to use chemists only to run a chemical plant. This resulted in the chief chemist becoming responsible for the whole of the manufacturing side, so that he had little time to devote to the purely chemical problems which constitute his proper work. The erection of a new plant or the remodelling of an old one was usually left to an outside contractor who, without being a chemical engineer in the real sense, might have gained a certain amount of useful practical experience through having been employed on similar jobs for other manufacturers, and who might sometimes be in possession of drawings and data which had originally been prepared by some consulting engineer. Many failures of quite good laboratory processes can be traced to the fact that neither the chemist nor the mechanical engineer employed on the works knew much about the correct designing and proper running of such common pieces of chemical plant as filter presses, evaporators, or centrifuges, and neither was familiar with the ordinary materials used in the construction of such plant. The running expenses, under such circumstances, were very apt to multiply into substantial figures, and some of these older works owed their success to the absence of competition or to the fact that they possessed some exceptional natural advantages rather than to any great industrial merit.

Nowadays competition is very keen in every industry, and the elimination of all waste of material, time and labour, is imperative if the undertaking is to survive. Fortunately, the South African Universities are not too much hampered by tradition, and at least one of them is now offering a full degree course especially suited to the needs of chemical engineers.

Graduates of this school possess a thorough knowledge of what has recently been recognised as an important, new and entirely distinct study—chemical engineering—besides a general engineering and chemical training, and consequently the development of new South African chemical works will not be retarded for the lack of technical assistants.

Nearly all manufacturing concerns need a plentiful supply of fuel, water and labour. Of these, good fuel and unskilled lavour are obtainable, although South African native labour is, at present, not nearly so efficient as that to be obtained in certain Asiatic countries. This fact must [illegible] as the necessity of finding chemical markets for the chemicals produced here has already been explained. Water may locally prove a great difficulty in some districts, but perhaps the question of skilled labour is the chief trouble which will be encountered. Responsible men, such as are required on chemical plants, may be obtained from overseas possibly, but the high wages which are necessary to attract such men are not always justified after the first few months. On the whole it seems that the best results are likely to be obtained by the present works themselves training picked young men and holding out to them the prospect of a good salary and a permanent situation when they can prove themselves competent by passing Government examinations and otherwise showing themselves worthy of promotion.

Raw materials are plentiful and information concerning them is becoming more and more easy to obtain. Land outside large towns is comparatively cheap, and in at least one instance a town is advertising its willingness to assist people who wish to start works in the vicinity.

Altogether, if Parliament would only settle down to real business the prospects appear to be bright, for with the Government watching over the welfare of local industries and keeping the path reasonably clear of interested opposition and unfair burdens in the shape of heavy railway rates, it will be found that the keys of the position are good organisation, a contented staff, business ability, and sound chemical engineering, and that, with these keys, many profitable chemical industries can be opened up in this country.

Mining in History.

Prof. E. A. Watermeyer delivered an interesting lecture at the Witwatersrand University last week on "Mining in History." Dealing with the Rand, he said that this area in 1887 yielded approximately £81,000 worth of gold, or 0.4 per cent. of the world's production; and in 1921 it yielded £33,661,330, or 51 per cent. of the world's production. From 1887 to 1921 it had produced £666,000,000, or very nearly 30 per cent. of the world's production. The rise of the Witwatersrand had been phenomenal, and under normal conditions it was going to persist for many years to come.

The practice of mining dated back to the dawn of human life. When a man started to fashion implements for his needs from stone, when he emerged from his savage state and the necessity arose to build protection against enemies or climate, he was constrained to apply the art of mining to obtain material for his edifices. In Egypt the earliest prehistoric graves had been found to contain copper harpoons, chisels, daggers, and spearheads. Relics of gold, silver and lead, together with an alloy of gold and silver known as electrum, had been discovered in the tombs of the First Dynasty of Egypt.

Early Tools.

The tools employed in the earliest Egyptian time were stone picks, short stone chisels and scrapers, wooden mallets and stone hammers. The mallet was all handle and no head, while the hammer was merely a rounded mass of stone. A remarkable papyrus of the time of Rameses II., in the Nineteenth Dynasty, was extant, and was probably the oldest mining plan recorded. In the Twentieth Dynasty an expedition was sent by Rameses III. to the copper mines of Atika. Flinders Petrie had traced the method of underground quarrying followed by the Egyptians opposite the Pyramids. Parallel galleries about 20 feet square were driven into the rock, and cross galleries cut so that a hall 300 feet to 400 feet wide was formed, the roof supported by rows of pillars 20 feet square and 20 feet apart. Blocks of stone were removed by the workmen cutting grooves all round them. Where granite, diorite, and other hard stone was encountered, the work was done by tube-drills and by saws supplied with corundum and water.

Labour 1d. a Head!

The Phoenicians were essentially a seafaring nation. They were fearless and patient navigators, and ventured into regions where no one else dared to go. With an eye to monopoly, they carefully guarded the secrets of their trade. Herodotus mentioned that about 700 B.C. a Phoenician fleet was said to have circumnavigated Africa. Xenophon, writing in 355 B.C. an essay on "The Revenues of Athens and Their Improvement," said: "Our silver mines alone, if properly managed, would be an inestimable treasure to the public." He pointed out that the date of the original working was shrouded in tradition, and he did not imagine that the mines would ever be exhausted or that silver could ever lose its value. At that time labour cost 1d. per head per day, whilst silver realised 30s. per ounce.

In 1700, in the North of England, the cost of raising and mining a ton of ore was 37s. 6d.; smelting to lead, 15s. per ton; carriage to waterside, 27s. per ton; the price of lead, £10 per ton. In Wales, at Eskolbir, the "cost of mining and raising was 5s. 8'd. per ton; carriage by water, 1s.; by land, 5s.; men's wages, 6s. per week; price of copper, £100 per ton; smelting and refining, £20 per ton."

The invention of the steam engine was primarily due to the need of some effective measures of raising water from the mines. In 1698 Savery obtained a patent for a water-raising engine by means of steam. At Freiberg, Saxony, on one of the the mines there was a pumping engine originally put in by James Watt, which was working ten years ago and might be working at the present day for all he knew.

Phthisis in 1550.

As far back as 1550 miners' phthisis was not unknown. Georgius Agricola, a scholar of that period, in 1550 wrote: "Some mines are so dry that they are entirely devoid of water, and this dryness causes the workmen even greater harm, for the dust which is stirred up and beaten up by the digging penetrates into the windpipe and lungs and produces difficulty in breathing and the disease which is called by the Greeks 'astma.' If the dust has corrosive qualities, it eats away the lungs and implants consumption in the body. Hence in the mines of the Carpathian Mountains women are found who have married seven husbands, all of whom this terrible consumption has carried off to premature death."

Geological Society of South Africa.

The next monthly meeting of members of the Geological Society will be held in the Main Hall, 1st floor, Scientific and Technical Club, 100, Fox Street (between Rissik and Loveday Streets), Johannesburg, on Monday, 11th June, 1923, at 8.15 p.m. The following papers will be open for discussion:—"The Dwyka Tillite near Palapye, Bechuanaland Protectorate," by H. B. Maufe, B.A., F.G.S.; "South African Oolites and their Metamorphism," by R. B. Young, M.A., D.Sc.; "On Occurrence of Lithomarge near Vereeniging," by R. B. Young, M.A., D.Sc.; "The Alkaline Rocks of the Franspoort Line," by S. J. Shand, D.Sc., Ph.D.; "A Remarkable Rock from the Pretoria Salt Pan," by P. A. Wagner, D.Eng., B.Sc.; "On Some Foraminifera and Ostracoda from the Cretaceous of Umzamba River, Pondoland," by Frederick Chapman, Asso. Linn. Soc., London (communicated by Dr. A. W. Rogers); "Additional Evidence Regarding the Igneous Origin of the High Level Diamond-bearing Breccias of Diamantina, Brazil," by David Draper, hon. member. The following papers will be read:—"On Olivine Rocks and Serpentines of the Bushveld Complex," by P. A. Wagner, D.Eng., B.Sc.; "Further Notes on the Asbestos Occurrences near Kaapsche Hoop," by A. L. Hall, M.A., F.G.S. (lantern slides will be exhibited in connection with this paper); "Geothermic Measurements in the Carnarvon Borehole," by L. J. Krige and H. Pirow, with a survey of the hole by Prof. G. A. Watermeyer.

The Week in the Sharemarket.

CORNER HOUSE AND BARNATO STOCKS FIRM—DIAMONDS DISAPPOINTING—DIVIDEND EXPECTATIONS.

After some irregularity, the market declined on Wednesday, the weakest feature being diamond shares. A slightly firmer tone is now evident. However, spread over the week, all of the dealings in the market do not amount to much, and the decline has been greatly due to the fact that there was no resistance to the few selling orders which came in for execution. Corner House Stocks have been firm, Modders especially so. Barnato stocks were again outstanding for the firmness of State Mines and New States. Van Ryn Deeps have been sold from London and bought locally for investment. Randfonteins have been steady, and it is considered that this stock may now be bought with safety. Better tonnage and grade and lower costs may now be looked for from this property. Knights have been bought for the dividend. General Mining stocks do not call for much comment; there have been a few buyers of West Rand Consolidated. Union Corporation stocks have improved on investment buying of Gedulds and Modder Deeps. New Kleinfonteins are supposed to have a gambling chance of better things on the results of development from an adjacent property. The Anglo-American Group have been rather out of favour. Anglos have declined with Consolidated Diamonds. Brakpans have been barely steady. West Springs, however, have been very firm, and the good prospects of the mine, as disclosed by the chairman's remarks at the recent meeting, are attracting attention. The diamond market has been disappointing. Consolidated Diamonds led the decline and fell seriously, afterwards recovering a little. It appears the stock is well held and soon responds to any bullish movement. Reports continue to come along of good sales being made of the gems, and as the position of Consolidated Diamonds is financially very sound, a recovery in the price of the shares will soon be evident. West Ends and Crown Diamonds were both weak. Nothing can be said regarding Industrials. There have been a few transactions in Cements, the 7½ per cent. dividend of Pretoria Cements did not appear to attract activity to the shares. There is nothing new regarding Alkali shares. Tin shares have been dull. Zaaiplaats recorded quite a good profit for the month of May and seem to be once more in a good financial state. Loans and Banks remain unchanged. There were sales of National Banks at £8 5s., and Reserve Banks appeared sluggish about £136. A certain proportion of the sales recorded during the week has been the outcome of holders changing over from one security to another in order to secure a better dividend. The declarations altogether are expected to be satisfactory. The gradual decline from which the market has lately suffered has brought many prices, hitherto too high, on to an attractive plane, with the result that most stocks will appear very cheap indeed when quoted "ex dividend" at the end of June.

	Fri. 8th.	Sat. 9th.	Mon 11th.	Tues. 12th.	Wed. 13th.	Thurs. 14th.
Anglo-Am. Corp.	24 3	23 9	23 6	23 3	22 [illegible]	22 6*
Apex Mines	6 6*	6 6*	6 6*	6 6	6 6	6 [illegible]
Aurora Wests	—	6 0*	6 6*	6 0*	6 0	6 0
Brakpan Mines	60 6*	—				
Brick and Potteries	—		5 0*	5 0	5 0*	5 0*
British S.A.	12 0*	12 6*	12 6*	12 3*		
Bushveld Tins	0 3*	0 3*	0 3*	0 3*	0 3*	0 3
Cinderella Cons.	3 3*	3 3*	3 3*	3 3*	3 6*	3 3
City and Suburbans	—	—	2 11	2 11*	2 11*	2 11
City Deeps	55 0	54 6*	54 3*	55 3*	55 [illegible]	[illegible]
Clydesdale Colls.		17 3†		17 3†	—	[illegible]
Con. Diamonds	19 6*	19 6	19 3	19 0	18 3*	18 0
Con. Investments	—	32 0†	32 0†			
Con. Langlaagtes	14 0*		14 0*	14 0*	—	14 3*
Con. Main Reefs	9 3*	9 4*	9 6	9 6*	9 6*	9 [illegible]
Coronation Colls	—	32 [illegible]	32 [illegible]	32 [illegible]	32 3*	32 3*
Do. Freeholds	0 10†		0 [illegible]			
Do. Syndicates	5 10	5 9	5 10	5 11	6 0	5 10
Crown Diamonds	6 3	6 [illegible]	[illegible]	[illegible]	6 0*	6 0
Crown Mines	52 0	52 9	51 [illegible]	51 [illegible]	50 0*	51 0
Daggafontein Mines	3 1*	3 [illegible]	3 [illegible]	3 3	3 2	3 1
Durban Road Deeps	16 6	16 3	16 [illegible]	16 [illegible]	16 6	16 3
East Rand Coals	1 3*	1 3	1 [illegible]	1 [illegible]	1 [illegible]	1 3*
East Rand Deeps	0 7	0 7*	0 7	0 6†	0 7*	—
East Rand Minings	16 0†		16 0	16 0†	16 0*	16 [illegible]
East Rand Props	5 [illegible]	5 9*	5 [illegible]	5 9	5 0	5 0
Eastern Golds	0 4*	0 [illegible]	0 6†	—	—	0 4
Ferreira Deeps			7 [illegible]	7 6†	7 6†	7 6*
Frank Smith Dmds.	3 1	3 0	3 1	3 1*	3 1*	3 0
Geduld Props.	64 0	63 0*	63 [illegible]	63 9	63 3*	63 6
Glynn's Lydenburgs	13 0	13 6	12 3†		12 4*	
Govt. Areas	112 6	116 3	117 6	117 9	116 9*	11[illegible] 6
Hume Pipes	8 0*	—	8 0	—	8 3*	8 0
Lace Props	8 6†	8 6*		8 [illegible]	8 3†	7 6
Langlaagte Estates	21 4*	21 6	21 [illegible]	21 6	21 0*	21 0
Leeuwpoort Tins	2 [illegible]	—	2 6	—	2 [illegible]	2 6
Lupaardsvlei Est	3 0*	4 3†		[illegible] 9	—	3 9*
Meyer and Charltons	70 0*	72 0				
Middelvlei Est	1 1	1 1*	1 0*	1 [illegible]	1 3	1 1
Modder B.'s	24 9	24 6	24 9	24 9	24 6*	24 0
Modder Deeps	14 9	14 6*	15 [illegible]	14 9	14 6*	14 9*
Modder Easts	6 3	6 4	[illegible]	6 [illegible]	[illegible] 4	[illegible] 5
Natal Navig. Colls	27 6*	27 [illegible]	27 6*	27 6*	27 6*	27 6*
National Banks	165 0	165 0	167 6*	165 0†		165 0†
New Eland Dmds.	42 0	40 0	40 9	39 6*	38 6	
New Era Cons	6 9*	6 9*	[illegible] 9	7 0	6 9*	7 0
New Kleinfonteins	5 6*	5 9†	5 0	5 0*		5 3
New Estate Areas	—	30 0	30 0	30 3*	30 0	30 0
Nigels	8 6	8 6*	8 6	8 6†	8 6†	7 0
Nourse Mines	15 0	15 3	14 [illegible]	14 9	14 [illegible]	14 7*
Pretoria Cements	40 0*	40 6	—			40 6†
Rand Collieries	1 0*	—				1 0*
Rand Nucleus	1 0†	0 10	0 10*	0 11*	—	0 11
Randfontein Est	20 3	20 0	19 9	20 0	20 0	19 3*
Rouxville Dmds.	1 2	1 2*		—	1 0	1 0*
Roberts Victors			8 0†			
Robinson Deep "A"	35 0	35 [illegible]	35 6†		35 0	34 [illegible]
Robinson Deep "B"	11 9*	12 0*	12 [illegible]	12 1	12 [illegible]	12 0
Rooibergs					3 0	3 0*
Shebas				3 0†		3 0*
Simmer and Jacks	3 2	3 1	3 2	3 1*	3 1	3 0*
S.A. Breweries	32 6†	33 0*	33 0†	31 0*	31 9	31 9*
S.A. Lands	3 4*	3 4*	3 5	3 4*	3 3*	3 4
S.A. Reserve Bank	£136†	£136†	£136[illegible]	£137†	£136†	£136†
Springs Mines	47 9	48 0	47 6*	47 6	48 0	—
Sub-Nigels	9 6	9 4	9 [illegible]	9 4	9 9	10 1*
S.A. Alkali					13 6†	
S.A. Townships	10 0*			10 6	—	10 6*
Transvaal Lands	18 0†	18 0†	18 [illegible]	17 6†	18 [illegible]	18 0†
Transvaal G.M. Est.	9 0	8 9	9 [illegible]	9 [illegible]	9 0	9 6†
Transvaal Silvers	—	14 6	—	14 [illegible]	14 0*	—
Union 5 per cent.	£100	£100*	£100*	£100	£100½*	£100[illegible]
Van Dyk			0 9	0 9*	1 3†	0 9*
Van Ryn Deeps	69 0	68 6*	69 0	68 9*	69 0	68 [illegible]
Village Deeps	12 9*	12 9	12 [illegible]	12 9*	12 6*	12 3*
West Springs	19 0*	19 3	19 7	19 7	19 6	19 1
West Rand Cons.	—	—		5 3*	5 3*	5 5
Western Rand Est.	3 1	3 0	2 9*	3 0†	2 10	2 9*
Witbank Colls.	32 6	32 6*	32 0	32 0*	32 0*	31 6*
Witwatersrands		15 6†	15 6†	15 6*	15 6	15 6*
Wit. Deeps	15 6*	15 7*	15 6*	15 9*	15 6	15 9*
Zaaiplaats Tins	5 1	5 1	5 0	5 3†	4 10	4 9

* Buyers. † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of the Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry

TRADE AND INDUSTRIES SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET. AWAITING EUROPEAN AND LOCAL STOCKTAKING RESULTS—IRON AND STEEL CONDITIONS HERE AND OVERSEAS—GERMAN SHIPBUILDING IN 1922—BRITISH FOREIGN TRADE IN MARCH—DELAGOA BAY'S INCREASED COALING FACILITIES—TIMBER AND BUILDING MATERIALS —LATEST METAL QUOTATIONS.

General.

Although some mining and material merchants this week report having had a fair turnover, business on the whole has been rather quiet and in consonance with late expectations. More and more this week in his peregrinations the writer has found that the statement that this is the mines and industry's stock-taking month, during which purchasing activities are reduced to a minimum, is a correct one. Merchants are now about to take stock, and for the time being are reluctant to launch out but quietly, or otherwise, considering in terms of balance-sheets and profits and losses. The present month, in good or bad times, gives pause to the mercantile community for the weighing up of the past year's transactions, and to very few merchants, if any, will the results of the past year's trading be satisfactory. To most, however, nothing extraordinary in the shape of profits has been expected, and therefore the results of the past year's trading activities will find themselves in red entries more to the right than the left side of Profit and Loss in their ledgers. Admitted that things are undoubtedly quiet at the moment, and leave room for much improvement, there are, in the opinion of commercial experts, gleams of hope for the near future. Taking the world-question of reparations—failing a settlement of which we cannot expect any stabilisation in general business conditions—there appear now far better prospects of rapprochement between the conflicting forces than have been apparent for some considerable time. Financial experts, like the Premier (Mr. Stanley Baldwin) and Mr. McKenna, are bound eventually to make their weight felt in international circles; and that such influence is already being exercised in French centres is already seen by the quite unexpected drop in reparation demands on the part of France as against Germany. There is no doubt whatever in commercial circles that a settlement (an early settlement) of this vexed reparations question is the crux of the whole world's business stability. America now has the gold of the old world, which she cannot profitably employ until settled relations are come to with Europe; in the meantime, the old world is languishing for the hoarded gold in the new. We in the Union of South Africa are particularly hungering for capital to further expand our mining and industrial resources, and are looking forward, not unhopefully, to some satisfactory settlement being arrived at in Europe shortly. Indications from the reports of Group meetings are satisfactory as to the progress of our gold mining industry, and the prospects for its future are happily most encouraging. These prospects are, however, dulled by the increasing folly of the Provincial Council in regard to taxation, which it is generally hoped may in the event be rendered abortive. Unless, however, some drastic measures are taken, and taken speedily, it is feared that such killing imposts will inevitably retard that inflow of capital to the Union which is so much needed to foster and expand our industries. A gratifying feature in the present position is the additional plant which has been added in Delagoa Bay to the coal plant—made in Johannesburg and a credit to local engineering brains—which will enable that port to deal satisfactorily in future with larger cargoes of Union coal than has been possible in the past. Many ships unfortunately have been obliged to pass the port hitherto owing to want of coaling facilities, and the additional plant should undoubtedly be a great stimulus to the Union's future coal trade. In the absence so far of any move at present towards creating a Union's harbour, this is looked upon by commercial circles as a step in the right direction. Prices of iron and steel locally remain much about the same, although quotations at home, according to latest advices, are still advancing. Some prices of timber are a shade lower, but on the whole not of much consequence, and another month or so should see timber merchants with sufficient stocks to enable them to carry out any work that may come along regardless of sizes to-day. A prominent Union mining and material importer, interviewed this week, said he was doing very fair business; in his opinion old-established firms were doing better than the mushroom concerns which had grown up during the last decade.

Iron and Steel.

Business this week has been extremely quiet. Prices oversea continue to advance without, however, any appreciable difference in local quotations. According to *The Times*, in consequence of the policy of M. Poincare, industrial recovery in Britain, which had begun to show itself, had been checked. British trade in the Cologne area had been held up and there was depression in South Wales owing to the impossibility of getting cheap steel on which the tinplate industry depends. Germany cannot buy goods from India any longer, and India consequently cannot buy so much from Lancashire. The complete financial collapse of Germany, adds *The Times*, is the certain consequence of the French policy, unless that policy is immediately and drastically modified.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes about 30s. a ton more; ⅞ and 1 in., 25s.; cheques plates, 27s. 100 lbs.; imported flats, ½ x 3-16, ½ x ¼, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ¾ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges 1s. 9d. lb. Brass sheets, [illegible] up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag) 2s. 8d. per lb. Phosphor tin, 2s. 10d. per lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 1¼ in. hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8d. per lb.; bolts and nuts, hexagon, ⅜, 7 5/16d. lb.; ½ in. [illegible] and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts [illegible], 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, [illegible] 6d. lb.; ½ in., 4d. to 4½d.; ⅝ in. and ¾ in., 3½d.; [illegible] spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in. to 36 in., 10s. 6d. to 11s. 6d.; 42 in., 20s. 6d.; piping, ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 56s. and upwards; barbed wire, "Shortthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Iron and Steel Position Overseas: Mail Advices.

The Outlook in Britain.

Quiet conditions have ruled during the week and uncertainty prevails as to the direction in which prices will change. If the situation in the Ruhr remains unchanged it is suggested that offerings of Continental material will again become restricted, and that most of the business that comes into the market will be taken principally by British works. Continental basic is quoted at about £5 6s., while transactions have taken place in British basic at £5 17s. 6d. delivered. Scotch iron is quoted at about £5 17s. 6d. to £6 at furnaces. No. 3 Midland iron has been sold at £5 10s.

Semi-Finished Materials.

There have been fresh offers of Continental semi-finished material, and two in. billets have been quoted at £7 f.o.b. Antwerp. Four in. billets have been offered at £6 15s. British billets have been sold at £8 15s. There has been a fair business done in Continental wire rods at about £10 15s.

Finished Materials.

The market has been quiet. Continental prices for steel bars and structural steel were somewhat firmer. The price for Continental steel bars being about £8 to £8 5s.; later in the week these prices dropped to £7 17s. 6d. f.o.b.

The production of pig iron of all classes in Britain during March amounted to 633,600 tons, a gain of 90,200 tons over the February output, and of 65,700 tons over that for January; and the production of steel ingots and castings was 802,500 tons, a gain of 95,400 tons over February, and of 178,200 tons over January. At the end of March 202 blast and 255 open-hearth furnaces were in operation.

The import and export returns for the port of Belfast for the first three months of 1923 reflect an improvement in the shipbuilding industry. Imports of plates increased from 6,941 tons to 10,966 tons, and imports of wrought and bar iron and steel from 6,889 tons to 14,052 tons.

Blast Furnace Cement.

Cement made from slag produced in blast furnace practice is the subject of a specification issued by the British Engineering Standards Association. It is hoped that its publication may lead to increased uses of what is to be known as Portland blast-furnace cement and the cheapening of this building material, for its manufacture is not controlled by the cement combine. For some years past this cement has been made and largely used in Scotland. The Admiralty, also, uses it because of its quality of resistance to sea corrosion. The difference in prices between the two cements is shown in the quotations of Portland cement at 70s. a ton in Scotland, and Portland blast-furnace cement at approximately 50s. a ton. Now that this cement has a recognised specification it is hoped that iron-masters will set up the plant necessary to convert a waste product into a much needed material. The total output of the two Scottish works last year was approximately 40,000 tons, every ton of which was absorbed.

European Steel Co-operation.

Sir Hugh Bell, while in the United States, stated that until it was possible to assure the co-operation of the Continental iron and steel trades it would be fatuous to try to make international arrangements such as those suggested by Mr Schwab. He added that when the time came he would favour coming to some agreement, and referred to the possibility of the French, if they finally gave up trying to get German coal, coming to an understanding with the British ironmasters. The British, he said, needed cheap ores, and the French needed coal, and the two countries might strike up a barter arrangement whereby France would deliver to England not only minette ores from Lorraine, but cheap grades from Normandy. Such barter would be economically sound, because exchanges of ore and coal could be made on a ton-for-ton basis. Plans of this sort had been frequently discussed by the industrialists of both countries

Wholesale Prices.

The Board of Trade Index Number of wholesale prices in April shows an advance of 0·7 per cent. compared with the general level in March. Owing chiefly to an increase of 5·2 per cent. in the iron and steel category, the April average for industrial materials was 1·7 per cent. above the corresponding figure for March. The group of other metals and minerals showe an advance of 1·6 per cent. The April index number for all articles is 161·4, compared with 160·3 for the previous month, and 160·1 a year ago. During the present year the iron and steel price level has risen from 131·0 to 160·1

Works Re-starting.

Work has been resumed at the Thornaby Ironworks of William Whitwell and Co., Ltd., which have been closed for over a year. Two of the three blast furnaces have been restarted. The Ebbw Vale Steel Works, which have been idle for seven months, were re-started on May 7th, after being closed down for two years. Three of the six furnaces at the ironworks of William Baird and Co., Ltd., at Kilwinning, have been restarted.

Increased Wages for Blast-Furnacemen.

The April ascertainment—which gives an average selling price for Bessemer mixed numbers of West Coast hematite pig iron of £5 5s. 8d. per ton, as against £4 15s. 8d. at the previous ascertainment—will increase the wages of Cumberland and North Lancashire blast furnacemen by 10¼ per cent., bringing their wages up to 11½ per cent. above standard.

Quotations.

Staffordshire common bars 14s. 3d.; galvanised corrugated sheets 23s. per cwt.

Tinplates.—Basis price, 20 by 14, 28s. to 28s. 6d. Works continue to ask 24s. 6d. to 25s. f.o.b. July delivery and are reported to be well booked up.

Wire, Nails and Sheets.

Galvanised wire in 1 cwt. lots, mild steel fencing, 1 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in 1 cwt. coils, 7 ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 21s. per cwt.; cut steel nails, 3 in. to 6 in., [illegible] in 2 ton lots, 20s.

6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 24s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 28s. per cwt.; black, 21s. per cwt. Tinplates and sinks, 30s. per basis. Aluminium

Quotations.

Pig Iron: Cleveland, foundry No. 1, 120s.; No. 3, 92s.; No. 4 forge, 117s.; mottled, 112s.; hematite mixed Nos., 122s. Finished iron and steel: Iron—Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Joists, etc., [illegible]; bars and angles, £10; tees, £11; joists and channels, £10 5s.; sheets, singles, £14 10s.; doubles, £15; trebles, £15 15s.; plates, ship, £10 10s.; boiler, £11; rails, £10 10s.

Germany.

The iron industry in the occupied area is now working at about one half the rate of output before the Ruhr adventure. The shortage is due in part to the financial strain imposed upon the works by the necessity of putting their output in stock, and partly to the unfavourable situation of the general "structural" material, always one of the biggest consumers. Great building schemes, especially by municipalities, have been put aside for the time being. It is expected that prices will be raised shortly. According to the report of the trade union of metal workers (embracing the entire iron industry and having a membership of about one and three-quarter millions), 4.6 per cent. of the members were out of work and 19.2 per cent. were on short time in mid-week, compared with respectively 4.1 per cent. and 17.8 per cent. in the previous week. The position is worst at Cologne, Stuttgart and Erfurt.

France.

The iron and steel market is stiffening, and quotations of iron and steel products on a sliding scale according to the price of coke at time of delivery are disappearing, due to the fact that the Société des Consommateurs de Cokes de Hauts Fourneaux has set a definite schedule of prices for coke to extend through May. Supplies of coke from the Ruhr have slightly improved, and prices of iron and steel products will probably remain stable until Ruhr developments come to a definite issue.

The pig-iron market is strong and several blast furnaces have recently been blown in. Firm quotations on pig iron are: basic iron, 500 frs. at the furnace; hematite pig, 550 frs. at the furnace. The steel market shows improvement. The plate market is very active.

In 1922 the French production of iron ore amounted to 20,832,000 tons, compared with 14,117,700 tons in 1921, an increase of about 47 per cent. The iron ore exported totalled 9,470,000 tons against 5,292,000 tons in 1921. Of this quantity, Germany took in 1922 1,995,000 tons, Belgium 2,[illegible] tons, the Saar 2,680,000 tons, Luxemburg 1,[illegible] tons, and Great Britain 244,000 tons.

United States.

The price of sheets is unchanged at $43. The operations of the steel mills have increased, and average 94 per cent. of capacity; the United States Corporation plant is working at 96 per cent. Some of the smaller bar mills are able to [illegible] and $10 per ton premium for a fortnight's delivery.

Pig Iron.

No. 2 foundry, Bessemer and basic $31: Western Pennsylvania: Steel: The April production of steel showed a decrease of 80,700 tons to 3,321,278 tons. The actual daily rate of production in April, however, was higher than that of March.

Semi-Finished Materials.

It is reported that several thousand tons of sheet bars have been sold in the Youngstown district for third quarter delivery at $45.

Japan.

Imports of iron ore, iron and steel into Japan in 1922 totalled 38,410,971 piculs (2,286,367 long tons), which compares with 24,119,554 piculs (1,435,688 tons) received in 1921. This may be taken as an index of the active revival of construction work in spite of the general economic depression. This is especially noticeable in the case of rails, the import of which for 1922 was about three times that for 1921, and in wire rods, the import of which more than doubled in the same period. The importation of bars, rods, angles and other structural shapes increased 66 per cent. in 1922 over the preceding year, and that of black plates 75 per cent.

Austria.

The imports of iron and steel into Austria in 1922 totalled 151,300 tons, compared with 200,000 tons in 1921. The exports of iron and steel were 163,400 in 1922 and 128,000 in 1921. Of the material imported 56,500 tons was pig iron, 52,000 tons hoops and bars, 23,000 tons sheets and 32,000 tons wire products. The only material supplied by Great Britain was 3,400 tons of pig iron and 960 tons of sheets.

Second-hand Machinery.

This market continues somewhat animated but, as stated previously, owing to scarcity of material in second-hand market, not very much business is being effected. Rejects of material months ago are now being eagerly sought for, and, said a prominent dealer this week, merchants of new material must now be doing well. There are, it appears, still a few orders going for certain industrial propositions, some for new and some for the old companies for maintenance orders. Trucks are very scarce, U's and V's from 10—20 cubic feet. Rails from 12 to 15, second-hand, are also very scarce; although there is a big lot of scrap stuff that is being sent in by the mines, their years' use precludes its being used for tramlines. There are several inquiries for batteries for the new Rustenburg (Batavia) gold fields, and it is hoped that some day these fields may enter into competition with the Rand in respect of new and second-hand machinery. There are several small battery spare orders for the northern districts, which are now difficult to supply on account of scarcity of materials, in battery parts particularly. Second-hand plates are still very scarce and when obtainable command very good prices. Dealers have been active in snatching up any cyanide tanks that have been offering. Generally, inquiries in the market for second-hand material show a better tone.

British Foreign Trade in March.

The total British foreign trade during the month of March showed an increase over February, imports being larger by £6,100,000 and exports by £2,400,000. Re-exports, however, fell off by £700,000. The principal increases in imports were recorded in the following classifications: Food, drink, and tobacco, £3,500,000; raw materials and unmanufactured articles, £1,000,000; and manufactured articles, £1,700,000. Exports of raw materials and unmanufactured articles increased £2,100,000 and manufactured articles £1,600,000. Re-exports of food, drink, and tobacco showed a slight increase; a falling off of £900,000 was noted in the classification of raw materials and unmanufactured articles.

Timber and Building Materials.

Timber prices remain firm but unaltered; stocks are good and only a few sizes of scantlings are presently wanting.

Building operations are active, and although no big contracts are at present under way the present medium-sized jobs leave contractors fairly busy. Greater activity is looked for after the turn of the half-year.

Prices of bricks are unaltered but firm.

These, without showing any outstanding features, are buoyant, and the trade is looking to better things coming along shortly.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3½d.; floorings, 6d. to 6¾d.; ceilings, 4d. to 4½d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d.

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[illegible] 17s. 6d. per cubic (Johannesburg); American oak, [illegible] 1½ in. and 2 in., [illegible] West African mahogany, 1 in. to 4 in. thick, [illegible] Rhodesian [illegible] American yellow pine, [illegible] £10 per 1,000 at works; stock bricks [illegible] to 70s.; [illegible] per 1,000 at kilns, [illegible] according to [illegible] Marseilles [illegible] £25 per 1,000 at [illegible] chimney pots, 12 in., [illegible] 15 in., 7s. 6d.; 18 in., 9s.; dry red oxide, 14s. per 100 lb.; [illegible]

Second-hand Timber Goods.

These are marking time at the moment, very little business being on offer. Second-hand timber is selling at about [illegible], with, however, a scarcity of stocks and very little doing.

Electric Goods.

Business in these lines has been very quiet this week, and indeed for some time past. German goods, dealers say, are coming in and are much cheaper than British. Locally prices are about the same, but competition and financial reasons are tending towards a somewhat lower level.

Latest Metal Quotations.

London, June 14: Standard copper, £67 7s. 6d. cash, £67 15s. three months; electrolytic copper, £73 10s. sellers' option, £74 buyers' option; copper wire bars, £74; standard tin, £197 [illegible] cash, £197 7s. 6d. three months; foreign lead, £26 prompt, £25 [illegible] forward; quicksilver, £19 2s. 6d.; bar silver, 31⅛d.; fine gold, 89s. 3d. per oz.

The Utilitarian Value of Geological Investigation, Illustrated by the Geology of South African Coals-VI

Anniversary Address by the President, C. J. Gray, A.R.S.M., read at the Annual Meeting of the Geological Society of South Africa.

Thus we see that we must consider the Molteno coals of the area at and near Stormberg as formed like the Beaufort coals of Zululand and Natal on the northern limits of a southern land. The Stormberg seams appear to be less continuous and the coal more variable in ash content and fuel ratio than the Natal seams and coals, and we may surmise that they originated on the border of a land at greater elevation or subject to more violent rains.

One can hardly venture to speculate on the origin of the coals associated with the Bushveld sandstones and clays, so little is known about them, but it appears most probable that they have been formed in basins of limited extent on a comparatively flat land surface. The association of clay with the coal seams on [illegible] (No. 1724) distinguishes it from all the seams known to be in the Ecca, Beaufort or Molteno beds, and indicates that it was formed under different conditions. While these seams are all in or near relatively coarse sandstones, the [illegible] seam was reached in a shaft 100 ft. deep which had passed through clay insufficiently hardened to be called clay-stone, extending from the surface to the seam.

Let us briefly recapitulate what we have seen with regard to the coal occurrences we have dealt with. We have the Ecca coals extending from the land of their day in the present Transvaal, then the Beaufort coals extending northward or north-westward from land to the east of Natal and Zululand, then Molteno coals extending northward from the same land, and lastly patches of coal of Upper Stormberg age formed in local swamps in the Transvaal. It seems to me that we should make quite certain as to whether or not that is a correct representation of the facts and, if we are satisfied that it is, should make it the basis of all our thoughts and speculations with regard to our coal areas. If they are facts, they are fundamental facts in the geology of the coal fields. The occurrence or non-occurrence of coal seams, the thickening and thinning of coal seams, and the multifold changes in character of coal, both chemical and physical, affecting as they do most intimately the economic values and uses of the coals, are not fortuitous, and the sooner we can convert geological theories into proved geological facts, the sooner will come the time when, in the search for and development of coal, we will replace empiricism by science.

If time would permit, I could go on to illustrate the great practical importance of such studies as petrography, and of the investigation of earth movements producing folding, faulting and tearing of rocks, and of igneous intrusions in their various forms. Such subjects, it is true, are of greater importance in connection with mineral deposits other than coal, but to those who have read the papers by du Toit, Stuart and Mellor, and the contribution to discussion by W. T. Heslop, the importance of faulting and igneous sheets and dykes in connection with the economic geology of the coal areas of Natal, Swaziland and the Komati Poort area will be sufficiently clear apart from the brief references which I have made in this address. I wish, however, in passing, to say that addition to our knowledge of the ages and inter-relations of our dykes and other intrusions is highly desirable. Such knowledge can be gained only by detailed and laborious work, both in the field and in the laboratory, which would give little return to the eyes of the uninitiated. It is to be hoped that much in that direction will be learnt from the recent work of the Shaler Memorial Expedition. A. Harker has written that "igneous activity, standing in close connection with the tectonic development of a region, is very intimately and fundamentally related to other parts of its geological history." I would add that knowledge of such activity is very intimately and fundamentally related to the intelligent and economical development of the mineral resources of a region.

In conclusion I would express three hopes: The first, that my errors this evening will stimulate those members who know the truth to make it known; the second, that other members will strive to fill in the gaps in knowledge, and to clear up the uncertainties which I may have suggested; and the third, that in your work you will remember the needs and limitations of those interested in the development of the resources of the country, so that you may, so far as possible, give them the geological information which they need and in such a manner that it will be appreciated.

Gold Premium and Refining Charge.

In the course of its latest monthly report, the Rhodesian Chamber of Mines says:—On the 13th of April, Messrs. Rothschild & Sons distributed 3s. 8½d. per fine ounce profit on gold realised during the quarter ended 31st March, 1923. This is the lowest premium distributed, the previous lowest being 6s. 6½d. for the preceding quarter ending 31st December, 1922. During January last the price of gold fluctuated between 88s. 8d. and 89s. 9d., dropping in the middle of February to 87s. 3d., the lowest price realised since the gold realisation arrangement commenced. During March the price varied between 87s. 9d. and 88s. 8d. Advice has been received from the local banks that the London refining and smelting fees have been reduced as from 1st May to the following:—Fineness 800 or over, 2d. per oz. bullion; 700 or over, 2¼d.; under 700, 2½.

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ORDINARY ANNUAL GENERAL MEETING.

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the [illegible] Ordinary Annual General Meeting of Shareholders of the NEW ELAND DIAMONDS, LIMITED, will be held in the Board Room, Basement, Cullinan Buildings, corner of Simmonds and Main Streets, Johannesburg, on Wednesday, the 4th July, 1923, at 11 o'clock in the forenoon, for the following purposes:—

1. To receive and consider the Balance Sheet, Profit and Loss Account and Directors' Report for the year ended 31st December, 1922.
2. To read the Auditor's Report.
3. To appoint two Directors in the place of Sir Thomas Cullinan, D.S.O., and Mr. B. W. [illegible], who retire in terms of the Articles of Association, but, being eligible, offer themselves for re-election.
4. To fix the remuneration of the Auditor for the past audit, and to appoint an Auditor for the ensuing year.
5. To transact any business that may be transacted at an Ordinary General Meeting.

The Transfer Register of the Company will be closed from the 27th day of June to the 4th day of July, 1923, both days inclusive.

The attention of Shareholders is directed to Clause [illegible] of the Company's Articles of Association, in terms of which all proxies to be used at the Meeting must be deposited at the Head Office of the Company at least 24 hours before the time appointed for the Meeting.

By Order of the Board,

C. S. WIMBLE,
Secretary.

P.O. Box [illegible]
67 & 68 Cullinan Buildings, Johannesburg.
[illegible] May, 1923.

EXTRAORDINARY GENERAL MEETING.

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that a Special or Extraordinary General Meeting of Shareholders of NEW ELAND DIAMONDS, LIMITED, will be held in the Board Room, Basement, No. 17 Cullinan Buildings, Simmonds Street, Johannesburg, on the 4th day of July, 1923, at 11 o'clock in the forenoon, or so soon thereafter as the Ordinary or Annual General Meeting of Shareholders shall be concluded, for the purpose of considering, and, if thought fit, passing, with or without modification, the following Resolutions:—

1. RESOLVED under and by virtue of the powers contained in Article Seven of the Articles of Association that the capital of NEW ELAND DIAMONDS, LIMITED, be increased from £75,000 (seventy-five thousand pounds sterling), divided into 75,000 shares of the nominal value of £1 each, to £100,000 (one hundred thousand pounds sterling), divided into 100,000 shares of the nominal value of £1 each, by the creation of 25,000 [illegible] new shares of the nominal value of £1 each, and that every shareholder registered as such on the 27th day of June, 1923, shall up to and including the 4th day of September, 1923, be entitled to purchase at [illegible] shillings per share as many [illegible] of the new shares as shall be proportionate to his shareholding in the Company (excluding fractions) [illegible] of new shares, provided he shall not later than the 4th September, 1923:—
   1. Apply for the proportionate number, that is, one new share for every three old shares, or a lesser number of new shares;
   2. Pay to the Company [illegible] in respect of each share applied for; and
   3. Lodge with the Company a Power of Attorney authorising the signature of the Supplementary Articles of Association on his behalf.

   Shares not subscribed or applied for as above, and shares made up of the fractional share remaining, shall be disposed of by the Directors as they may think fit.
2. RESOLVED that any two of the Directors of NEW ELAND DIAMONDS, LIMITED, be and they are hereby authorised to cause the necessary Supplementary Articles of Association to be prepared and registered providing for the increase of capital aforesaid.

The Transfer Books of the Company will be closed from the 27th day of June to the 4th day of July, 1923, both dates inclusive.

JOHANNESBURG, this 4th day of June, 1923.

By Order of the Board,

C. S. WIMBLE,
Secretary.

67-68 Cullinan Buildings,
P.O. Box [illegible], Johannesburg.

CIRCULAR TO SHAREHOLDERS.

Re INCREASE OF CAPITAL.

DEAR SIRS,

As the Rock Shaft has been completed to the 425 foot Level and connected up with the Mine, and as there are now upwards of 1,000,000 loads available for treatment by the Washing Plant, your Directors have thought it advisable, in the interests of Shareholders, to consolidate the Capital Expenditure hitherto provided out of profits, and liquidate outstanding liabilities, and also to provide funds for an up-to-date Compound System, by increasing the capital.

With this object in view it is proposed to increase the capital by 25,000 shares.

The development of the Mine is now in a position to supply sufficient loads for the full capacity of the Washing Plant, and, with the increased capital proposed, your Company will be placed in a position to devote future profits to the payment of dividends.

Your attention is directed to the accompanying Notice of the Extraordinary General Meeting to be held on the 4th July, at which the resolution to increase the capital will be submitted, and if passed will enable all Shareholders registered at that meeting to apply on or before the 4th September, 1923, for one additional share for every three held.

By Order of the Board,

C. S. WIMBLE,
Secretary.

67-68 Cullinan Buildings,
P.O. Box [illegible],
Johannesburg, [illegible] June, 1923.

AN OUTSTANDING FEATURE

Of the Mining Industry is the rapidly increasing success of "RAND" CARBIDE for Underground Lighting. This latest product of South African enterprise is fast winning its way to the highest point of popularity by virtue of its unequalled quality. It is already used almost exclusively by the Mines of the Witwatersrand, and, apart from this, is giving satisfactory service all over the Union, in every branch of Acetylene Lighting and Welding.

Insist on "RAND" Carbide.
Awarded Gold Medal at the Rand Show, 1923.
Obtainable in all sizes and packings from Dealers, or direct from Factory Germiston.

RAND CARBIDE, Ltd. (P.O. Box 127 'Phone 252) Germiston, Tvl.

TIMKEN
TAPERED ROLLER BEARINGS

Carry all loads at all speeds in simple mountings; are simple and require extremely rare attention.

Distributors for Timken Bearings:
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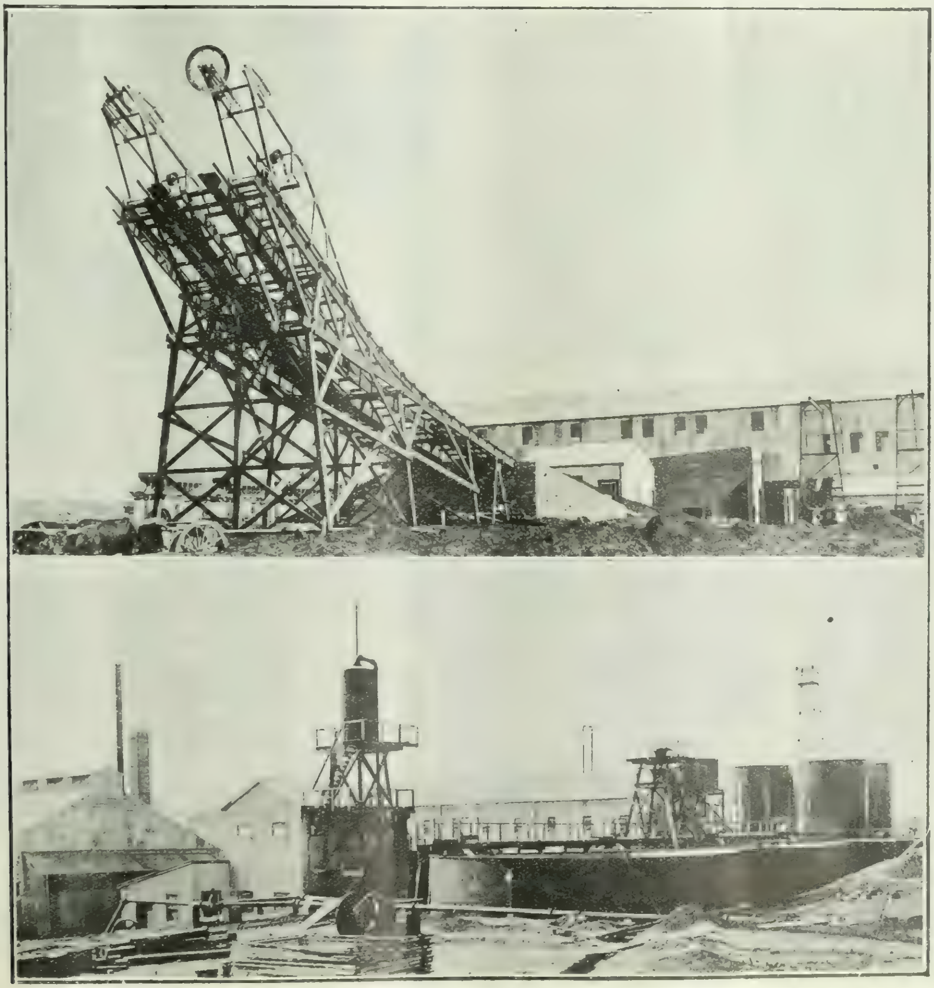
94, Main St. (P.O. Box 899) Johannesburg

Crown Diamonds—Durban's Great New Graving Dock Illustrated—The Half-Year's Dividends—The Transvaal-Delagoa Bay Coal Trade.

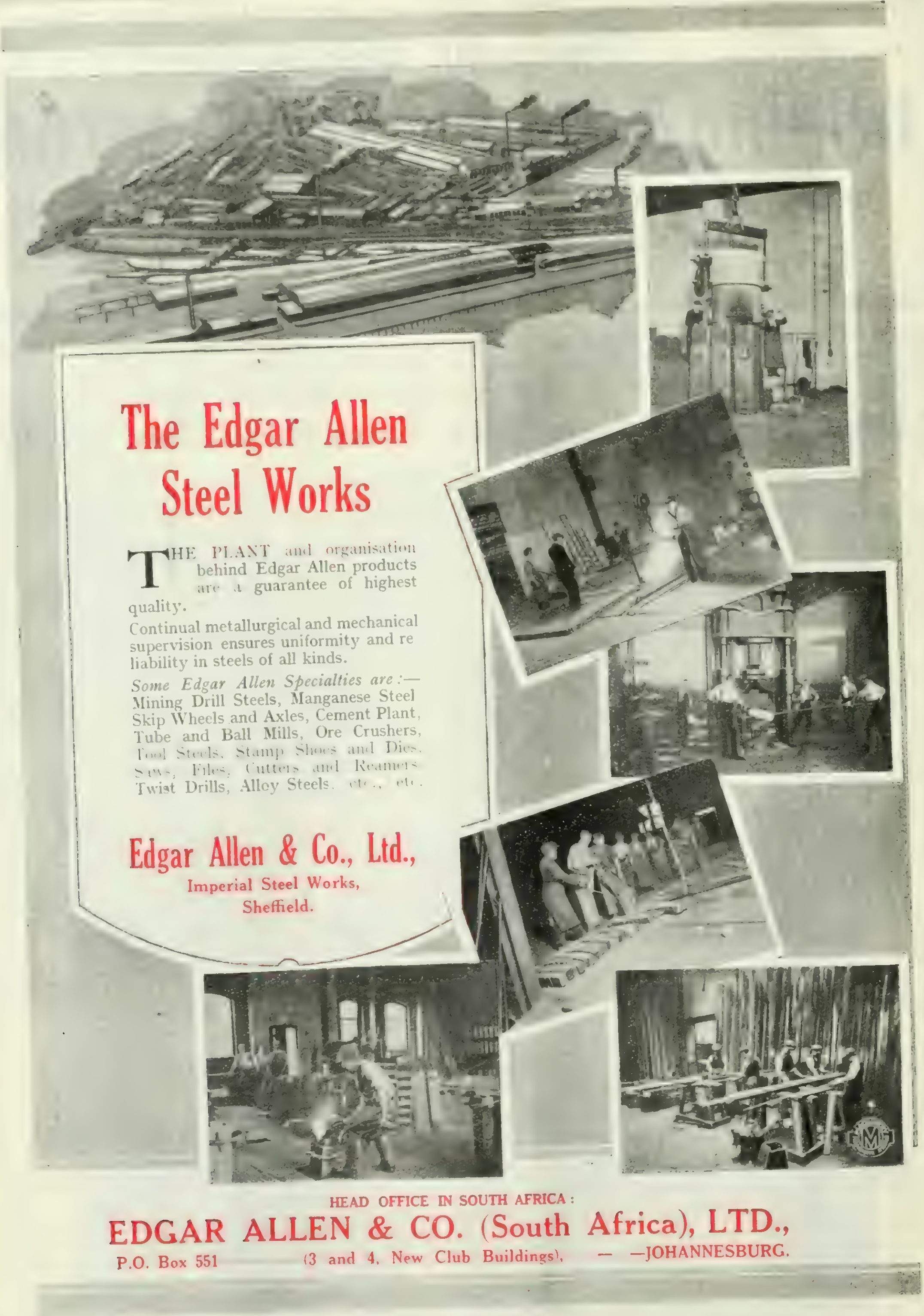
The South African
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Established 1891.

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JUNE 23, 1923 No. 1656

Latest Views of New State Areas Reduction Works



At top: Novel hoist to waste rock dump. At foot: Completed Butters Filter Plant, showing searchlight tower on right lighting the entire reduction plant.



The Edgar Allen Steel Works

THE PLANT and organisation behind Edgar Allen products are a guarantee of highest quality.

Continual metallurgical and mechanical supervision ensures uniformity and reliability in steels of all kinds.

Some Edgar Allen Specialties are:— Mining Drill Steels, Manganese Steel Skip Wheels and Axles, Cement Plant, Tube and Ball Mills, Ore Crushers, Tool Steels, Stamp Shoes and Dies, Saws, Files, Cutters and Reamers Twist Drills, Alloy Steels, etc., etc.

Edgar Allen & Co., Ltd.,
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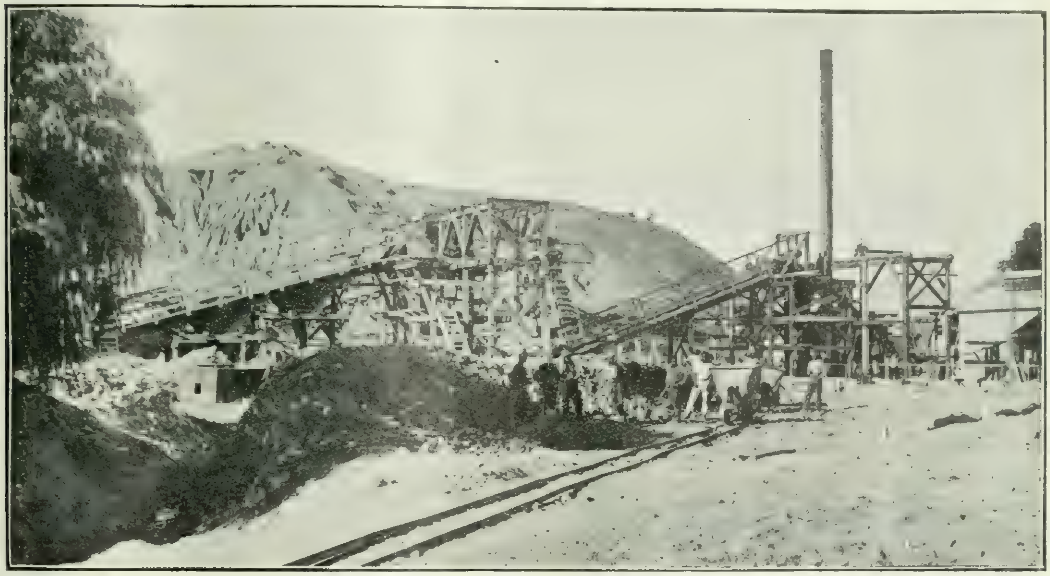
HEAD OFFICE IN SOUTH AFRICA:
EDGAR ALLEN & CO. (South Africa), LTD.,
P.O. Box 551 (3 and 4, New Club Buildings), — —JOHANNESBURG.

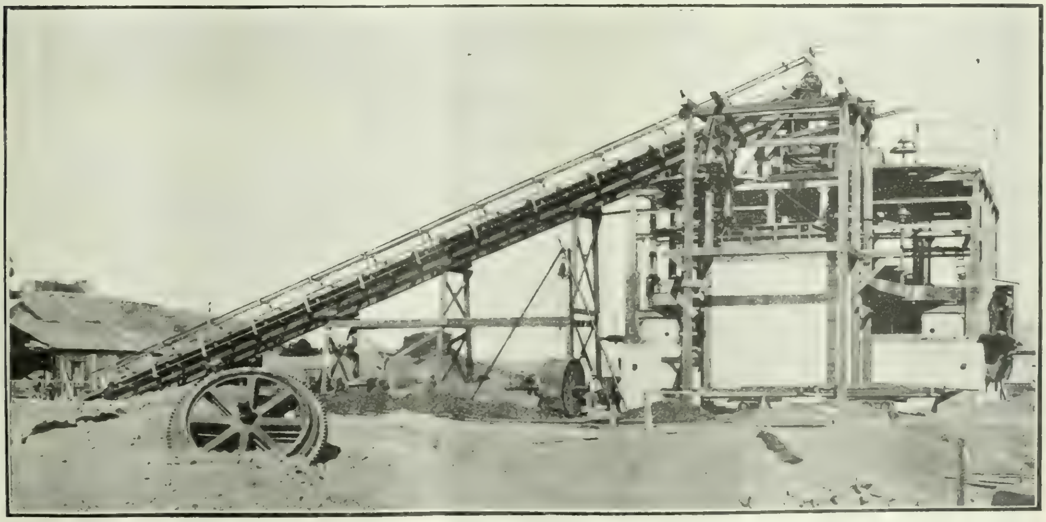
Crown Diamonds: Plant Completed.

WASHING OPERATIONS TO COMMENCE ABOUT MIDDLE OF JULY—MOST MODERN PLANT WITH 50,000 LOADS PER MONTH CAPACITY—MINE PRACTICALLY CLEARED OF HARDIBANK—COMPANY'S PRODUCT ASSURED OF GOOD PRICES—COSTS AT 2s. 6d. PER LOAD—GOOD PROSPECTS OF SUBSTANTIAL PROFITS.

The new treatment and washing plant of the Crown Diamonds Co. is now practically completed, and it is confidently anticipated that the installation will come into operation about the middle of next month. At the outset the run will necessarily be of a trial nature, and in this as in all new equipment it is quite possible that some minor adjustments will have to be made. The plant, however, has been most carefully laid out, and several devices calculated to make for smooth and efficient running have been introduced.



The Crown Diamond Company's New Washing Plant.



Crown Diamond Company's Plant: This photograph is a continuation of the photo above it.

Equipment Briefly Described.

The plant has been erected under the supervision of Mr. [illegible], consulting mechanical engineer to the Lewis and Marks Group, in consultation with Mr. [illegible] Kingston, the consulting engineer, and it can confidently be asserted that it represents the last word in the treatment of diamondiferous ground and is the most modern installation of its kind in the country. The capacity of the new equipment is [illegible] loads per month, and it is anticipated that very shortly after the completion of the preliminary runs the installation will be working up to full capacity.

The equipment has been designed particularly with a view to the elimination of [illegible] which have figured so prominently in other diamond mining equipments. These [illegible] are costly to maintain, frequently get out of order, and from the manager's and mechanical engineer's viewpoints are to-day described as a "nightmare."

Briefly stated, the outstanding features of the plant and of the progress of the diamondiferous ground through it are as follows: The ground from the aerial mechanical haulage gear is fed into a receiving hopper by means of a mechanical feeder. It then passes over a sorting belt into rotating grizzlies. The oversize from the grizzlies is crushed in two Hadfield crushers, whilst the undersize "bypasses" and joins the product from the crushers. The product is next carried over a belt into a [illegible] grizzley. The oversize is crushed in two [illegible] rolls and the undersize "bypasses" through this grizzley and joins the crushed product.

From here the pulverised ground goes on to the washing gear, and at this stage in the operations water is introduced at the head of the [illegible]. The product passes through trommels, the oversize going on to 6ft. rolls and the undersize to the top washing pans. Overflow from the top pans also goes on to the 6ft. rolls. From the rolls the product goes to the bottom pans. The overflow from these is fed into separators whence the waste product passes out to the dump. The excess puddle in pans returns to the sump and is re-handled. The extract from the pans goes out to the pulsator houses and, passing through the pulsators, is fed on to the grease tables. Features of the equipment are that each machine is driven by its own individual motor and the tailings are eliminated in a dry state. Another matter calling for remark is the employment of [illegible] disc grizzleys which are considered to be very efficient for dealing with this class of ground and are new to South Africa.

The Crown Diamond Mine: This photo depicts the enormous amount of hardibank that has been taken out of the mine.

Position at the Mine.

So far as the mine is concerned, the workings are now practically free of hardibank. A photo illustrating this article shows the immense amount of hardibank, probably something like 200,000 loads, that has been cleared from the mine. Very large quantities of clean blue ground are now available.

There is plenty of water on the property and a sufficiency of native labour. Costs are not expected to exceed 2s. 6d. per load, and there is a large demand for the company's stones at good prices. It certainly looks as if the Crown Diamonds Company, after a very chequered career, is at last coming into its own. Substantial profits seem assured and, having regard to the small capital of the Company, the prospect of reasonable dividends being earned may be considered good.

Industrial Propaganda.

The Kimberley representative at the recent Publicity Congress at Capetown, in making a report on his return to Kimberley, said, *inter alia*: "Perhaps the item which aroused most interest, and certainly led to the most extended discussion was that on industrial propaganda. The Publicity Agent's report showed that propaganda was directed solely towards attracting agriculturists, but, as you may have gathered from Press reports, I found it desirable immediately upon receipt of his report to put my views in writing, and the Publicity Department thought them of sufficient importance to circulate to the other members of the committee in advance. I had no criticism to offer on either the manner or the quality of the agricultural propaganda being carried out, but I felt very strongly indeed that we were neglecting our opportunities in failing to cater for classes such as the small manufacturer with some capital and considerable technical and organising ability. I felt that such men attracted to this country by suitable and carefully compiled information would have the necessary capital and skill to start industries on a small scale, with prospects of eventual expansion. We should also endeavour to attract the man with a knowledge of a "home industry," and combining with this a small holding—of which there are hundreds in every large town in Britain—and these men would be a valuable adjunct to our urban population. Their qualities of thrift and industry would be an incentive to others, and they would doubtless later, and to a large extent, provide the best element from which we would recruit our settlers for irrigation schemes. Propaganda attracting steady, industrious men of these types to our shores would soon attain an importance hardly second even to our agricultural propaganda and would probably show quicker results.

* * *

The English Electric Company, of 85, St. George's Street, Cape Town, the local agents of Messrs. Siemens, of London and Woolwich, have received cabled advice that their principals have been entrusted with an order from the Australian Commonwealth Government for the installation of an automatic telephone exchange of 1,400 lines for Brisbane.

SHIPS AND SHIPPING.

WORLD MOVEMENTS UNDER SURVEY—NEW VESSELS FOR INDIA AND AFRICA.

(From Our Special Correspondent.)

London, June 1.

Doubt and uncertainty obscure the shipping outlook. Building costs are still far too high for the majority of owners anxious to lay down new keels. The freight market would hardly justify the outlay, and the immediate future of the sea-carrying trade would not warrant a boom, such as the yards desperately need, even if prices were brought down to a more economical level.

The general condition of trade was very clearly outlined a day or two ago at the launching at Dundee of the 10,000-ton geared turbine liner " Menelaus " for the Blue Funnel Line. Mr. Laurence Holt, one of the owners' firm, hinted that they might be able to place additional orders at the past, but added that ships were more costly than they should be, and that there would be no revival in shipbuilding until costs were cut still further. But Mr. S. P. Brown, the chairman of the Caledon Shipbuilding and Engineering Co., speaking later, said that they had been undertaking contracts at less than cost in order to provide work for their men, and they were " trying to jog along and lose as little money as they could."

And " jog along " both owners and builders must until there is a general and all-round improvement in international trade.

Hitherto, the owners of the new " Menelaus," whose house flag is well known in South African waters, have not had motor ships in their fleet, but now they are building three. The first vessel to be completed will be the " Tantalus." She is due to run trials in the course of the next few weeks, and will be followed by the " Medon," in which 3,000 i.h.p. long-stroke Burmeister and Wain diesel engine will be fitted. Incidentally, this is the largest motor of its type that has ever been built. The " Medon " is a normal cargo vessel of about 10,000 tons deadweight but the " Tantalus " is considerably larger and is equipped with high-powered machinery. She has a dead-weight of about 12,000 tons, the gross tonnage being slightly over 8,000.

A few additional interesting contracts have also been announced from the north. The British India Company has in course of construction, or projected, no fewer than ten steamers ranging from 2,300 to 8,000 tons. One, the " Khandalla," of 7,300 tons, is intended for the Bombay-East Africa service. The new tonnage at present projected by the P. & O. Company (including the " Maloja " and " Mooltan," each of 21,000 tons, and now well on the way to completion) amounts to 97,600 tons gross. Messrs. Elder Dempster & Co., Ltd., have placed an order with Messrs. Harland & Wolff for six oil-carrying barges for service on the west coast of Africa. They will be between 70ft. and 100ft. long, and are to be built at the firm's Scottish yards.

Denmark's New Wooden Walls.

Those people who say that the days of the wooden ship are over will be interested to learn of the " Gertrud Rask," a vessel of about 800 tons, which has been built entirely of wood, and for the most part of Danish oak, to the order of the Danish Colonial Department.

She is destined for the Greenland service and one of her first commissions will be to carry the Riksdag delegation which will this summer visit Greenland.

The " Gertrud Rask " has just left the stocks at Nakskov. She is 150ft. long, 33ft. broad, and 16ft. 16in. in depth from the edge of the rabbet to the upper edge of the deck-beams. Her accommodation, apart from its limitations, is quite up to the Atlantic liner standard. In the deck houses aft there are navigation cabin, a light and spacious smoke room, wireless room, etc., and in the superstructure beautiful cabins are being fitted out for 22 passengers and for the officers. Amidships, in the superstructure, a large saloon is being erected with white enamelled walls, panelled with gold beading and fluted columns, bearing at the top the arms of Denmark and Greenland. The furniture will be of mahogany. There will be electric light everywhere, bathrooms and other conveniences, in order to make the trip as pleasant as possible. By means of her wireless equipment the ship will be able to maintain communication with the rest of the world during the voyage.

Danish expert opinion describes the " Gertrud Rask " as a valuable addition to the Greenland fleet, and a credit to her builders and flag.

The Derelict of Montevideo.

Romance has not yet been driven off the face of the waters, for, in its more tragic phase, there is certainly a touch of the romantic in the recent history of the American five-masted schooner " Martha P. Small." Nearly three years ago she was towed into Montevideo with rudder missing and generally heavily damaged by bad weather.

OSBORN'S
SPECIALITIES.

A Few of Them:

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THE ORIGINAL HIGH-SPEED.
STEEL,
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WORKS: CLYDE STEEL WORKS, SHEFFIELD

Her cargo was [illegible] and she was [illegible] to [illegible]. Then she fell on evil days [illegible] and [illegible].

At length, however, the [illegible] and [illegible] the "Martha P. Small" was left practically abandoned, heeling over with a list of about [illegible] degrees, a conspicuous object of neglect and desolation.

Last week, she was sold for 2,[illegible] dollars, but it is doubtful if she will ever take to the seas again.

A Chapter of Accidents.

Another tale of a schooner, this time of British registry, comes a few days ago from the island of Mauritius.

Unfortunately, it is even more tragic in its setting, the significance of which becomes apparent when one reads between the lines of the staccato sentences of the formal report sent in by Lloyd's local agent: "WANETTA.—Mauritius, Apr. 16.—The master, Wilson, of the British schooner 'Wanetta' reports that during a heavy gale on January 15 at St. Paul the vessel's port chain carried away and she began to drive on shore, making it necessary to slip the starboard chain at the 30-fathom shackle. On returning to St. Paul when the weather moderated, dragging operations were continued for some time, but only the port anchor and chain were recovered. On February 3 two of the "Wanetta's" boats capsized in the pass to Crater Lake, where the "Wanetta" was anchored, and six men were drowned. The lower topsail yard, which had broken during the voyage and had been temporarily repaired, carried away when approaching the anchorage at St. Paul.

World's Biggest Ship Controversy.

Shipping circles, both here and on the other side of the Atlantic, are keenly debating the claim of the United States Shipping Board that the "Leviathan" (ex-German "Vaterland"), under her new tonnage rating, is the world's largest ship. According to the New York *Journal of Commerce*, the new measurements by which the "Leviathan's" register is increased to 59,956 tons gross, have been officially approved by the Board of Navigation.

It is announced, however, that the officials declined to make public the figures showing the deductions by which the net register was calculated and the spaces that are ordinarily exempted.

"The Bureau of Navigation," adds the Journal, "stated, in view of the questions that had been raised as to whether the "Leviathan" or the "Majestic" was the world's largest ship, it would prefer to have all announcements as to measurements and exemptions made by the Shipping Board. These figures must be carried on board the ship in the papers of documentation. It was understood that the Shipping Board, instead of claiming exemptions for the passenger space and that devoted to light and ventilation, had this counted in the tonnage of the vessel and thus caused more than 5,000 gross tons to be added to the register."

It may be of interest, in view of this statement, to give comparative dimensions of the "Leviathan" (ex "Vaterland") and of the "Majestic" (ex Bismarck), which are as follows:—

	Length.	Breadth.	Depth.
Majestic	915.5	100.1	58.2
Leviathan	907.6	100.3	58.2

In "Lloyd's Register" the gross tonnage of the "Majestic" is given as 56,551, and that of the "Leviathan" as 54,282.

Public Works and Thrift.

A sum of nearly £13,000,000 is to be spent by the Government from loan funds during the financial year ending March 31 next. The money is to be disbursed as follows:—

Railways and harbours	£7,000,000
Public works	661,000
Telegraphs and telephones	500,000
Lands and settlements	350,000
Irrigation	1,000,000
Local works and loans	1,921,000
Land and Agricultural Bank	500,000
Forestry	200,000
Native affairs	2,000
Defence	66,000
Agriculture	26,000
Special advances to Provincial Administrations	722,000
Total	£12,951,000

To meet the above expenditure it is estimated that £1,041,000 will be recovered from various sources, such as rent receipts, £50,000; gold mining leases, £375,000; and bewaarplaats, £65,000. Unemployment relief is provided for to the amount of £100,000. It is noteworthy in this connection, Mr. Burton, the Minister of Finance, in recently congratulating the Randfontein School on winning the Allen Cup for Thrift, wrote, *inter alia*: "During last financial year a sum of £8,000,000 was expended from loan funds on extensions of railways and harbours, telegraphs and telephones, irrigation and land settlement loans, schools and other public buildings, and other objects of capital expenditure, and a substantially greater sum will be expended on the same objects during the current financial year. Whatever sum is contributed to the loan fund through the sale of Loan Certificates naturally reduces the sum it is necessary to raise by other means, and, which is important, the sum it is necessary to borrow outside the country. Until quite recently practically all our loan requirements were supplied by borrowing in London, and in 1916, when our first big local loan was floated, there were only 400 stockholders of the various loans which had been floated locally. To-day there are many thousands of holders of local stock quite apart from the thousands of certificate holders. In 1910 only 8 per cent. of our debt was held in the Union, to-day more than one-third of it is held in the Union. Prior to the institution of the Union Loan Certificate, those who subscribed to our loans were practically limited to the richer classes; now it is possible for everyone to contribute in this way to the development of the country. To one concerned as I am with the financial policy and management of the country, it is eminently satisfactory to see the increasing numbers of men, women and children participating in its loans and so contributing to its development and securing a stake in the country. For this development must make for greater stability and a wider and more intelligent interest on the part of the people in the conduct of the country's finances."

Benefit of Air Currents in Mines.

The effect of air currents upon workers in mines has been studied by officers of the United States Bureau of Mines for some years past, and a report, "Physiological Effect of High Temperatures and Humidities with and without Air Movement," by R. R. Sayers and D. Harrington, has now been issued as a bulletin, serial number 2464. The investigations show conclusively that up to a temperature of 98 degrees F. movement of humid mine air reduces considerably the untoward effects that are so noticeable when there is no movement of the air. In still air at a high temperature there is an increase in body temperature and in pulse rate, profuse sweating, and often dizziness and weakness. When the air is kept circulating there is little or no increase in body temperature or pulse rate, sweating is reduced, and after effects are minimised.

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BREYNER & WIRTH, LIMITED
Box 786——LOURENÇO MARQUES

The Congella Graving Dock.

SECOND BIGGEST STRUCTURE OF ITS KIND IN THE WORLD—WHERE H.M.S. HOOD COULD RIDE AT EASE—COMPLETION END OF NEXT YEAR AT COST OF A MILLION AND A THIRD.

(By Our Special Commissioner).

Those who flash by Congella—the new and industrial suburb of Durban—in fast-travelling trains have no conception of the immensity of the work that has been taking place just across the main railway line during the past 3½ years. The casual passer-by will observe a medley of steam dumps and trucks, cranes and branch lines. Nearer the ocean may now be noticed the structural steel frames of the much-discussed grain elevator, and beyond will be seen the dredgers busily engaged in reclaiming this exceedingly valuable land from the slime and ooze of the ocean's backwash. Armed with a permit one may, however, make a closer inspection and observe what is probably the second biggest graving dock in the world and certainly the largest in the southern hemisphere in course of construction.

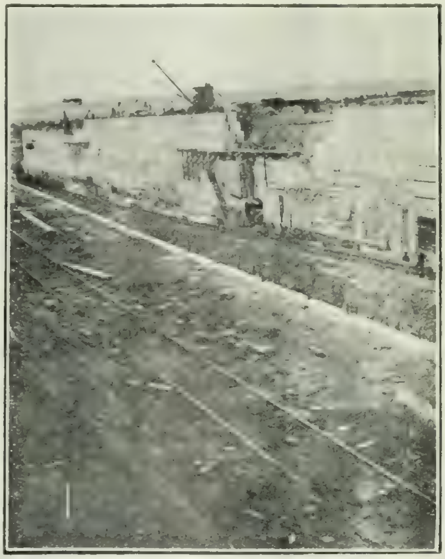
Preliminary work was commenced there at the end of 1919 and the task was grappled with in earnest as from the beginning of 1920. By the end of next year the dock will, it is hoped, be completed and the total cost of the work, including interest on capital and subsidiary undertakings, will be in the neighbourhood of a million and a third pounds. The dock alone will cost approximately a million sterling and it is a feat in marine engineering of which South Africa, the Railways and Harbours Administration, Durban, and Mr. Crabtree, the engineer in charge may well be proud.

A graving dock is in effect a hospital for shipping, a storm-sheltered basin in which the most complete and thorough repairs may be undertaken. The Congella graving dock is half as large again as the one at Simonstown, and the largest ocean-going Leviathans that visit our shores—the "Arundel Castle" and "Windsor Castle," for example—will be able to secure berthage within it. The Congella graving dock is, in fact, so big that the greatest battleship of the British Navy—the super-dreadnought, H.M.S. "Hood"—will be able to enter it.

The total length of the dock is 1.232 feet, with an available docking space of 1.140 feet. The width at the floor is 110 feet and the width at the coping is 138 feet. The floor of the dock is 40 feet below low-water level; the sill is 35 feet below low water, and the rise and fall of the tide is 6 feet.

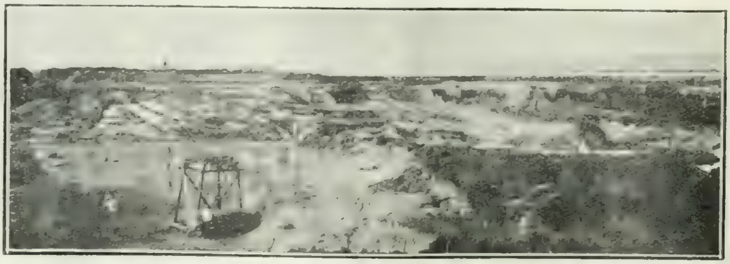
There are two compartments, the outer of 660 feet and the inner of 440 feet. Seven hundred to eight hundred natives and one hundred and eighty white men are engaged on this work, which, when completed, will constitute one of the engineering triumphs of South Africa.

A HOSPITAL FOR SHIPS.



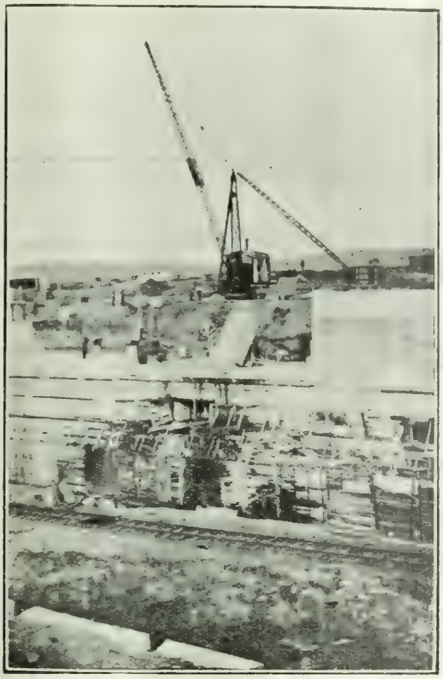
A scene at Congella where the second biggest graving dock in the world is approaching completion.

Photographs, specially taken for the "South African Mining and Engineering Journal" the other day by our travelling Commissioner, accompany this article and enable one to in some degree appreciate the immensity of the undertaking and the able manner in which the work has been carried out.



At the bay end of the dock, showing dredgers in the distance.

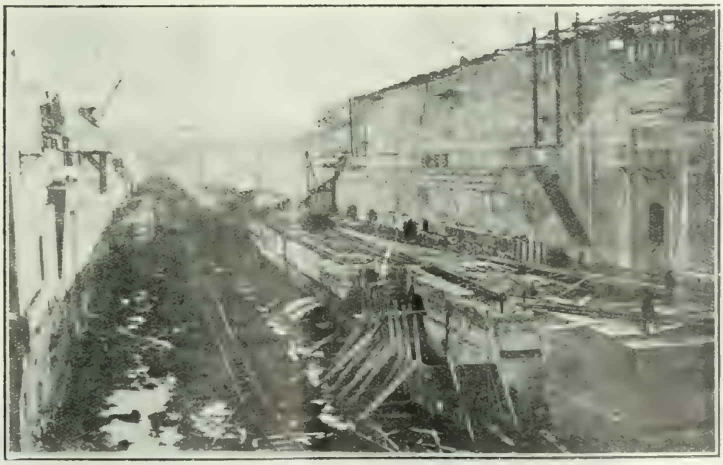
DURBAN AS ONE OF THE WORLD'S GREAT PORTS.



Huge Cranes at Work.

An Immense Undertaking.

Where the "Hood" could ride at ease. A photo taken from the floor of the dock.



A general view of the Congella Graving Dock taken a few days ago.

De Beers Preference Dividenos.

De Beers have declared a dividend on the preference shares of 25s. per share, less Union dividend tax at 7½ per cent. This is in payment of the balance of the accumulated preference dividend in arrear and in full payment of the dividend due to preference shareholders for the current year ending on the 30th June, 1923, and will be payable to preference shareholders registered at the close of business on that date.

Planet-Arcturus.

It is understood that recent developments at the Planet-Arcturus Mine, Enterprise district, have been far from satisfactory, and as a result operations are being considerably curtailed. A number of employees have already been retrenched, while others will not be required after the end of July, when the monthly tonnage treated will have to be reduced by 50 per cent. On the reduced basis it is hoped to keep the mill running for some months.

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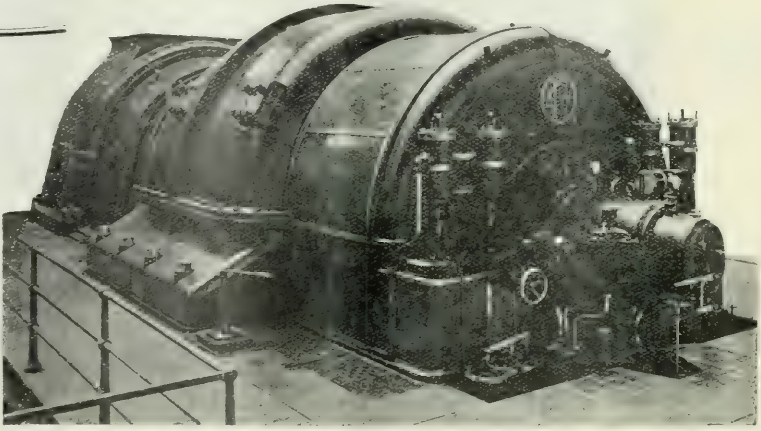

18,750 K.W. (23,000 K.W. Overload) Fraser & Chalmers High Pressure Steam Turbine.

The New Coaling Facilities at Delagoa Bay.

IMPORTANT STATEMENTS MADE AT INAUGURAL BANQUET—APPRECIATION OF PORTUGUESE ENTERPRISE.

The official opening of the new coaling plant at Delagoa Bay—briefly recorded in our last issue—was brought to a close by a banquet given by the contractors, Messrs. Head, Wrightson and Co., to the Acting Governor-General and leading officials and citizens of the port, as well as a number of mining engineers, financial and business men from the Transvaal.

In proposing the chief toast, Mr. Colin I. Simpson, Joint Managing Director, Robert Hudson & Sons, Ltd., representing the Contractors, who presided, said:—

Your Excellency The Acting Governor-General, and Gentlemen,—I have been asked to propose to-night the toast of the Portuguese Government of the Province of Moçambique, which is indeed a very great privilege and pleasure. I only regret that Sir Guy Wrightson, that eminent Engineer and Managing Director of Head, Wrightson of Thornaby-on-Tees; also Mr. Frank Stephenson, his South African representative, are not here to share this honour, but I am sure, nevertheless, they will be thinking of all that has been going on to-day with great pride.

I can vividly remember in 1907, when I first came to Lourenço Marques, seeing the wharf, known as the Caes-gorgao, a wooden structure virtually propped up on sticks. In contrast, which is remarkable, to-day you have a reinforced concrete pier of over a mile in extent, with an equipment, which, from technical design and efficiency compare with any port in South Africa; indeed, it would not be going too far to say, that would bear favourable comparison with any port of its age throughout the world.

Progress.

When one takes into consideration the adversity of circumstances in the last nine years, it is surprising to think how progress has steadily gone ahead, and this unmistakably owing to the persistent determination and foresight of the Portuguese Government. I have travelled on frequent occasions to many parts of the Province of Moçambique, which undoubtedly in labour, soil, water and mineral resources has much to be proud of. Many of us feel, of course, that all these great resources would be more completely and successfully exploited under conditions which ensured close co-operation between Moçambique and the Union of South Africa.

Convention.

We know that compromise must be the basis of negotiation, where legitimate national sentiments are so strongly engaged, and as both the Portuguese and Union Governments appear to realise this, a settlement in due course one confidently looks for.

Portuguese Officials.

I have detained Your Excellency and gentlemen longer than I originally intended. I wish, however, in conclusion, to recall to your minds in the development of Moçambique and this port, the services that have been rendered by such prominent men as the Acting Governor-General, Mr. Macedo; General Sir Freire d'Andrade, men whose name is household, not only in the Province of Moçambique, but throughout Europe. Coupled with them I think of Col. Costa Serao, Col. Sa Carneiro, Major Galvao, Mr. Joes Pinto, Mr. Jose Ferreira, and last, but not least, Mr. Guiseppe Provay, who is mainly responsible for many of the important technical details of the Coaling Tippler constructed by Messrs. Head, Wrightson and Co., the opening of which has been officially celebrated to-day.

The Acting Governor-General.

The Acting Governor-General, Mr. Macedo, replied congratulating very warmly the contractors on the satisfactory completion of the appliances, the official opening of which they had celebrated that day. The whole of the work connected with the new plant had been carried out in workshops in the neighbouring country, and this was something of which they could all be proud. Lourenco Marques was thus provided with a second coal-loading appliance, and this fact, he thought, showed very conclusively the desire of Mocambique to work in the closest harmony with the interests of the Union, and of doing everything possible in order to promote the trade of their nearest neighbour, the Transvaal.

The new plant was the result of an undertaking given to the Transvaal coal owners in 1920, when the trade began to show signs of exceeding the capacity of the old McMyler tippler, and the ceremony they had witnessed that morning showed that the Portuguese were capable of carrying out their promises. If and when needed, further facilities would be given the Transvaal coal trade through its natural port. As matters were he was afraid that for some time to come the port was provided with a capacity in this respect well ahead of any demands that that traffic could make on it. However, it was well to look forward, and all their hopes now were that trade should improve and come up to the great expectations which people in the Transvaal formed with regard to their great coal resources.

His Excellency went on to say that the Portuguese province undoubtedly desired to work with the Union in a spirit of close co-operation, and he trusted that the enterprise shown that day on their side would be met in a reciprocal spirit by the neighbouring country, leading eventually to a great increase of trade through the port.

In conclusion, the speaker thanked the Chairman very cordially for his expression of good feeling towards the Province of Moçambique, and said he had listened with great interest to his eloquent address.

In proposing the toast of the "Port and Railways of Lourenco Marques," Mr. John Roy, Chairman Coal Owners' Association, said that for the past thirteen years he had been chairman of an association that had passed in transit through the port of Delagoa Bay between eight and nine million tons of coal. In 1910 the export tonnage was very small, and competition from Durban that had enjoyed a 20 years' start was formidable. As a port of call, and also a terminus of several steamship lines, Durban had considerable advantages in so far as bunker coal was concerned, but had no advantages over Delagoa Bay as an export port. Up to the beginning of 1914 the loading of coal was all done by native labour; but, thanks to the efforts of Major Sa, then Inspector of Public Works, the McMyler coaling appliance was erected, and, up to date, had done extraordinarily good service. "For export purposes, in my opinion," said Mr. Roy, "it is the best coaling appliance in African waters." In June, 1920, he went on, the plant showed signs of wear and tear, and, there being no relief plant, little opportunity of effecting repairs was found. They petitioned for an extension of the wharf and duplication of the old plant. The Portuguese Administration pointed out that, as relief was urgent, he utilise the sixty-ton crane and construct a dumper on the existing wharf, which would give much quicker facilities. Unfortunately, owing to unforeseen difficulties in connection with the foundations, great delay had been the result. However, it was now ready to deal with any tonnage, and the detention of steamers should be a thing of the past.

Extension Required.

Despatch in regard to steamers loading coal was of the utmost importance if they were to compete on an equality with other ports. They must be prepared to place a steamer under the loading appliance within 24 hours after reporting ready to load, or pay the penalty; and they had no margin in price to pay penalties. For this reason he sincerely hoped [illegible] of the extension of the wharf and another [illegible] had not been abandoned. Delagoa Bay was the natural port and outlet for a great hinterland. The collieries of the Transvaal had expended about five million pounds in equipment, and at present were in a position to increase their output by 40 per cent. Iron and other industries would be established, and agriculture, ranching, etc., were growing daily. This development meant great capital expenditure, and an efficient outlet for all surplus must be assured. Although the port of Delagoa Bay was probably, at the day, as well equipped as any other port to meet the growing demands, further expansion was inevitable, involving heavy capital expenditure. In embarking on such expenditure the Portuguese Administration was entitled to an assurance that the traffic would be forthcoming. "It is regrettable," added Mr. Roy, "that no business arrangement with regard to this intransit traffic has so far been fixed up. I must confess that I feel strongly our business difference is capable of adjustment, which would be for the mutual benefit of all concerned." Mr. Roy, in conclusion, expressed his appreciation of the services rendered by the railways and port and Administration, and coupled with the toast the name of the Director of Railways, Mr Noronha Andrade.

The Director's Speech.

In responding, the Director of the Lourenço Marques Port and Railways, Captain Abel Andrade, said he was in full agreement with the words spoken by Mr. Roy. The achievement they were celebrating did honour to all those who had been concerned in it, and augured well for the future of the port. It was necessary that there should be assistance and co-operation on a mutual beneficial basis, such an undertaking being essential to the prosperity of the two neighbouring countries. The construction of a second coal-loading appliance, with which the port of Lourenço Marques was being provided, was a striking step in this direction, it now remaining for the coal interests over the border to do their part to justify the efforts which had been expended. What could be done in the case of individuals was also applicable to nations between one another.

After paying a tribute to the work of the contractors and that of the port electrical engineer, Mr. G. Provay, Captain Andrade concluded by toasting the prosperity of the Province of Mocambique and the coal trade through the port of Lourenco Marques.

MR. J. F. FERREIRA'S SPEECH.

Mr J. F. Ferreira, official agent for the Lourenco Marques port and railways at Johannesburg, in reply to the toast of the "Coal Export Trade," said it had been a great pleasure to him to listen to the words of encomium which had fallen from the lips of previous speakers in praise of the beauty of Lourenco Marques and its magnificent harbour. He had been for many years a resident of Lourenco Marques, and it was always with pleasure that he cast back his thoughts on it. Both Mr. Roy and Mr. Pott had given expression to the idea that a great future awaited the coal trade through that port, and in this he fully concurred. The ceremony they had all witnessed that morning marked a most important stage in the development of Lourenco Marques and should have a far-reaching effect on the expansion of the coal industry on the other side of the border, in which, as his friend Mr. Roy had stated, some five million sterling had been invested. The Portuguese Administration had thus supplied the means whereby some ten to twelve thousand tons of coal could be loaded per day, and it now remained for the industry concerned to procure markets capable of doing justice to these added facilities. The time would no doubt come when the capacity now attained would be fully used, and in this connection he would like to point out that the port, as the visitors had had occasion to observe that morning, had been devised by nature on a most ample scale, and mile upon mile of wharfage, right up the river as far as Port Matolla, some seven or eight miles in extent, could be built at an enormously lower cost than anywhere else on the South African coast. That visit and what it portended should serve to show very clearly that a strong community of interest existed as between Mocambique and the Transvaal. At Lourenco Marques they had the geographical key of a vast and rich hinterland, and a business and friendly arrangement was all that was needed to ensure the prosperity of both sides. He felt sure that before long this would be achieved, and once the present little difficulties had been got over the community of interest he had spoken of would be given full play.

In conclusion, Mr. Ferreira proposed the toast of their host, Mr Colin Simpson, joint managing director of Robert Hudson & Sons, Ltd., who in the past had done appreciable work on behalf of the continuation of the good relations which had long existed between the Union and Moçambique, and with whom they all no doubt willingly associated the success of that visit and the knowledge it had afforded many of their distinguished visitors from the other side of the border.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

June 29.—Durban Roodepoort Deep, Ltd. (s), 10 a.m.

July 4th.—New Eland Diamonds, Ltd. (a), 11 a.m.; special meeting immediately afterwards.

July 19.—Transvaal Consolidated Lands (s), 12 noon.

August 10.—Transvaal Consolidated Lands (s), 12 noon.

Sept 20.—Transvaal Gold Mining Estates, Ltd (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

Mining Men and Matters.

Mr. E. L. R. Kelsey, Secretary and Legal Adviser to the Chamber of Mines, has left on a visit to London.

* * *

Mr. S. J. Speak, M.I.M.M., the well-known consulting mining engineer, is visiting the Rand on his return from a professional trip to Rhodesia.

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The Half-Year's Dividends.

GOLD AND FINANCE COMPANY DECLARATIONS—COMPARISON WITH CORRESPONDING FIGURES OF 1922.

The following are the dividend declarations for the first half of the current year announced up to the time of going to press:—

Dividends declared payable to shareholders registered as at 30th June, 1923:—

Company	Amount. 1922. s. d.	1923. s. d.
Aurora West	0 6	0 6
Apex Mines, Ltd.—10/- ...	0 6	0 3
Brakpan	-	4 0
City Deep, Ltd.	1 6	4 0
Crown Mines, Ltd.—10/- ...	0 6	2 9
Government Areas	4 0	6 0
Geduld Props	1 3	2 3
Johannesburg Consolidated Investment	1 6	2 6
Langlaagte Est.	—	2 0
Modder Deep Levels—5/- ...	2 6	3 0
Modder "B" G.M. Co. 5/-	1 6	2 6
Meyer and Charlton	10 0	10 0
New Modderfontein—10/- ...	2 0	5 0
Nourse Mines	0 6	0 9
Pretoria Portland Cement ...	1 6	1 6
Rand Mines—5/-	1 0	3 0
Robinson Deep "A"	-	4 0
Rose Deep	1 0	1 3
Springs Mines	—	2 6
Stock Exchange Prop. Rt. ...	£5	£5
Sub-Nigel	0 9	0 9
Van Ryn Deep	2 0	5 0
Van Ryn Estates	1 0	1 6
Witwatersrand (Knights) ..	1 0	3 0

Heidelberg Activity.

NIGEL RUMOURS.

On the farm De Hoek, in the Heidelberg district, prospecting has been going on along the extension of the line of reefs which traverses Bothaskraal, Houtpoort, etc., and excellent assays are being obtained from samples of a good body of ore that lies undisturbed and continuous along the north-west edge of the farm, says the local paper. We congratulate Messrs. T. Meyer and C. Pistorius upon the success of their operations and hope soon to be able to record some tangible results. Unofficially, the news comes to us, adds the same paper, that the directors of the Nigel Gold Mining Company have been authorised to raise £150,000 to provide working capital for the resumption of work on the Nigel at an early date and that the company has just pegged off over 70 additional claims. Meanwhile the work being done by Messrs. Thomas and Aspland on Bothaskraal, we hear, is being rewarded with appreciable success. They are working, we hear, on a different reef from that on which the old Molyneux suffered shipwreck (after extracting £20,000 worth of gold), which is giving excellent results. We understand, further, that the reefs on Marais Drift are shortly to be worked and that certain preliminaries are at present being negotiated with the Mines Department (relating to the mynpacht).

Hope Town Alluvial Diggings.

As reported in *The S.A. Mining and Engineering Journal* a few weeks ago, the Government early in May obtained an interdict closing these diggings pending the issue of the litigation respecting the true ownership of the precious minerals on the farms held under ancient titles in this district.

Early in May the Resident Magistrate of Hope Town read the notice to the diggers, and ordered work to stop forthwith. After hearing the miners' representations, he, however, gave them a few days' grace to complete the washing of any ground taken out. This he did on his own responsibility, but his action was confirmed later by Government.

On the 18th May the place was finally closed, many of the diggers going to another of Mr. Pringle's farms, Klein Magouw, others to Brakfontein, some 25 miles near to Prieska. On both these farms diamonds are being found pretty frequently, but mostly of small size. On one claim at Braktontein 6 stones were found of 3 to 4 carats each. The largest so far discovered on this farm is 8½ carats; the stones are white and of good quality, however. On Magouw the diamonds are often faulty.

These farms are held under similar titles to Kliptontein, and if finds are of sufficient importance, the Government will have to take steps to "proclaim" them. It is stated now that the owners have at long last resolved to go no further with their action at law, but will accept the Government terms. It is to be hoped that now all difficulties have been removed from the speedy proclamation of Kliptontein as a public diggings.

The Central Mining/Rand Mines Group.

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that dividends for the period ending 30th June, 1923, have been declared payable to Shareholders registered in the books of the undermentioned Companies at the close of business **on the 30th June, 1923.**

The Transfer Books will be closed in each case from the 1st to the 7th July, 1923, both days inclusive.

Warrants in payment of the dividends will be posted on or about the 7th August, 1923.

Holders of Share Warrants will receive payment of Dividends at the London Office, No. 1, London Wall Buildings, London, E.C.2, and in the case of Companies which are abonnee to the French Fisc from the Credit Mobilier Français, 30 and 32 Rue Taitbout, Paris, on presentation of the respective Coupons, numbered as shown below, on or after the 8th August, 1923.

Coupons must be left FOUR CLEAR DAYS for examination before being paid.

Name of Company.	Dividend No.	Share Warrant Coupon No.	Rate of Dividend Per Cent	Per Share.
City Deep, Ltd.*	22	22	20	4/- per £1 Share.
Crown Mines, Ltd.*	44	44	27½	2/9 per 10/- Share.
Modderfontein B. Gold Mines, Ltd.*	22	22	50	2/6 per 5/- Share.
New Modderfontein Gold Mining Co., Ltd.	34	34	50	5/- per 10/- Share.
Nourse Mines, Ltd.	36	36	3¾	9d. per £1 Share.
Rose Deep, Ltd.*	44	44	6¼	1/3 per £1 Share.
Village Deep, Ltd.*	27	27	5	1/- per £1 Share.

* Abonnee to the French Fisc.

By Order of the Boards,

RAND MINES, LIMITED, Secretaries
Per S. C. STEIL.

Head Office: The Corner House,
Johannesburg, 15th June, 1923.

The Week in the Sharemarket.

RESTRICTED BUSINESS—DIVIDENDS AND QUOTATIONS—THE LONDON VIEW.

Restricted business throughout the week led to dullness in the market. The satisfactory dividend declarations have been received in most cases with apathy, but in one or two instances led to a flicker of speculative interest. In the absence of fresh business prices tend to droop. Corner House stocks were notable for the rise of Modders at one time to over 81s. Nourse and City Deep have been quietly dealt in. Modder B have been a feature on buying for the dividend and on reports of satisfactory development. The dividend return on to-day's price is a good one. Durban Deeps have been steady. There may shortly be a revival of interest in Geldenhuis Deeps. A great deal of conjecture is about regarding East Rands, but nothing concrete is so far available as news. Barnato stocks are in much the same position as last week. A further improvement in results is expected at Randfontein for this month. The Johnnies dividend is a pleasant feature. The declarations from Government Areas and Van Ryn Deeps are as expected. Knights and Langlaagte are rather better than was hoped. Langlaagtes are favoured in the market, and are expected to see a better price on merit. Union Corporation stocks have been without feature. Gedulds have had some business and Modder Deeps the usual buying for the dividend. Goldfield stocks have featured Sub-Nigels on better development. Simmer and Jack have been very dull, in spite of favourable rumours from the mine. Interest in General Mining shares has centred round the vague reports of an arrangement being arrived at between the East Rand Proprietary and Cinderella Consolidated for a joint scheme of working.

Diamond shares have displayed no new feature. Reports regarding the diamond market continue favourable, but some support is required from the parent houses before much can be done with the shares.

In the industrial market there has been some selling of Cements. Pretoria Cements and Cape Cements have both dipped a little in price. The Pretoria dividend is not considered large enough in view of the troubled future which this company may have, and there has been some selling to re-invest for a better return elsewhere. There has been selling of Alkali, said to be the liquidation of a large estate.

Investment stocks have been fairly active. National Banks have been sold, and there have been one or two small transactions in Reserve Bank shares. Government Loans have attracted their usual share of attention. Some attractive debentures also drew buyers, such as Robinson Deep 8 per cent. The Durban Deep debenture which will shortly be available will be very attractive.

The London view of the Kafir market is favourable. The technical position is extremely good both there and here. Among the interesting points emerging from the reef are the successful experiments being carried on with the Sullivan drill at Crown Mines and the vast amount of excess development being done generally, both factors making for a drop in costs at the correct moment. The more hopeful view of trade taken by the Governor of the Reserve Bank, as revealed by his speech from the chair, somewhat clears the financial outlook.

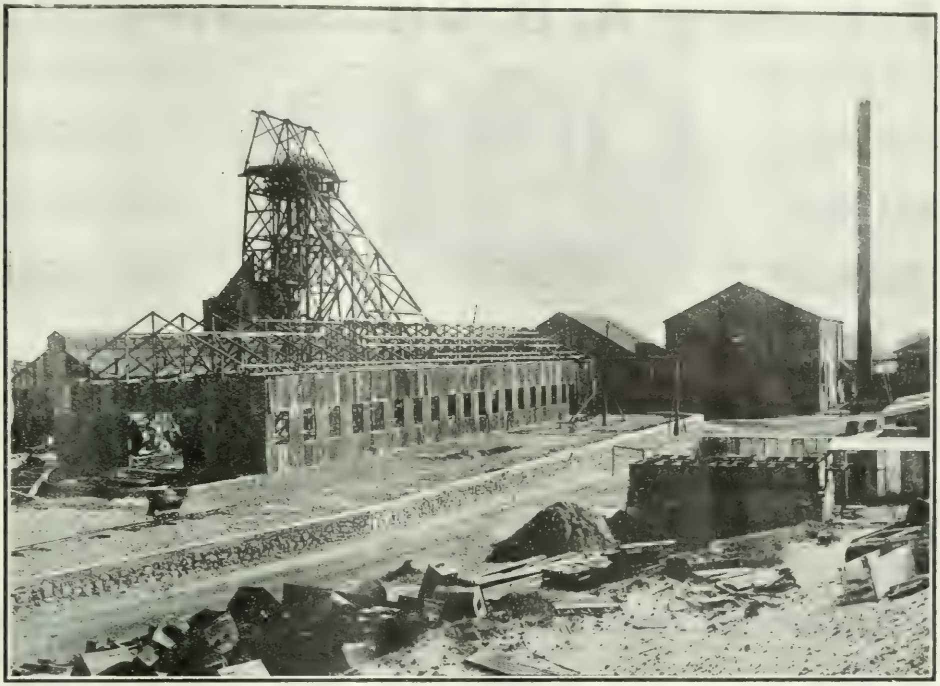
	Fri. 15th.	Sat. 16th.	Mon. 18th.	Tues. 19th.	Wed. 20th.	Thurs. 21st.
Anglo Am. Corp.	22 6*	23 0*	23 0*	23 0*	23 0	23 0
Apex Mines	6 9*	6 10*	6 6*	6 6*	7 0†	6 6*
Aurora Wests	6 0*	6 0*	6 0*	6 6*	6 0*	6 0*
Brakpan Mines	59 0*	—	—	61 6		
Brick and Potteries	5 0*	—	5 0*	5 0*	5 0	—
British S.A.	12 6*	—	12 6*	—	—	12 3*
Bushveld Tins	0 3*	0 3*	—	0 3*	0 3*	0 3
Cinderella Cons.	3 3*	—	3 3*	—	3 0*	3 0*
City and Suburbans	2 11*	—	—	2 11*	2 11*	2 11*
City Deeps	55 3	55 9	56 0	56 0	56 0	55 0
Clydesdale Colls.	16 0*	16 0*	—	16 3*		—
Con. Diamonds	18 6*	20 0	19 10½	19 6*	19 6*	19 6
Con. Investments	32 0†	32 0†	32 0†	32 0†	32 0†	32 0†
Con. Langlaagtes	14 0†	—	14 0*	14 0*	14 0*	14 0*
Con. Main Reefs	9 3*	9 3	9 0	9 3	9 3*	8 9
Coronation Colls	32 6†	[illegible]	32 3†	32 0†	31 9*	32 0†
Do. Freeholds	0 7*	—	0 7†	—	—	—
Do. Syndicates	5 9*	—	5 3†	5 0†	5 3*	5 3
Crown Diamonds	6 0*	6 1	6 1*	6 1	6 2	6 1
Crown Mines	41 3	41 3	40 9*	41 0	40 3*	19 6*
Daggafontein Mines	3 3	3 2*	3 2*	3 2*	3 2	3 1
Durban Rood Deeps	16 6*	16 6	16 6*	16 3*	16 3	16 3
East Rand Coals	1 3*	1 3*	1 3*	1 3*	1 3	1 3*
East Rand Deeps	0 7*	0 7	0 7*	0 7	0 7*	0 7*
East Rand Minings	—	—	—	—	—	10 0†
East Rand Props.	5 6			5 6*	5 7	5 6†
Eastern Golds		0 4	—	0 4*	0 4*	0 4*
Ferreira Deeps	7 6†	7 6†	7 6†	7 6†	7 3†	—
Frank Smith Dmds	3 0	3 0*	3 0	3 1*	3 1*	3 1*
Geduld Props.	62 9*	63 0*	62 6*	62 9*	62 9*	62 0*
Glynn's Lydenburgs	12 3*	13 0*	12 0*	12 9†	12 6	—
Govt. Areas	113 0*	114 3*	114 6*	116 0	115 0*	114 9
Hume Pipes			8 0*			8 6*
Lace Props	7 9*	7 9*	7 9	7 9*	—	7 9*
Langlaagte Est.	21 0*	21 7*	21 6*	21 6	21 9	21 9*
Leeuwpoort Tins	2 6	3 0		2 6*	2 9*	2 9
Luipaardsvlei Est.	3 9	—	3 9*	3 6*	—	3 3*
Middelvlei Est.				1 1*	1 0*	1 2*
Modder B.'s	24 9	24 10	24 10	25 3	25 6	25 3*
Modder Deeps	11 9	11 6	11 6*	11 9	11 9*	11 9
Modder Easts	6 4	6 3*	6 4*	6 3*	6 3*	6 6†
Natal Navig. Colls.	27 6*		27 6*	27 6*	27 6*	27 6*
National Banks	160 0†		150 0*	155 0*	155 0	152 6
New Eland Dmds.	32 6	35 0*	39 0	38 6*	38 0*	38 0*
New Era Cons.	6 6*	6 6*	6 6*	6 9*	6 6*	6 6*
New Geduld Deeps	0 6*					0 4*
New Kleinfonteins	5 3*	5 3*	5 3*	5 6	5 3*	5 3*
New Modders	80 0*	80 9	80 6*	80 6*	80 6	80 0*
New Primrose		3 0*	3 0*	3 0*	3 0*	3 0*
New State Areas	36 0*	36 0*	36 0	36 6*	36 6	36 3
Nigels		8 6†	8 0	8 0*	8 0*	—
Nourse Mines	14 9*	15 3*	15 3	15 0*	15 0*	15 0*
Pretoria Cements	39 0	38 6*	38 6*	38 6*	38 3*	38 3
Rand Collieries	—	—	—	1 0	1 0*	1 0*
Rand Nucleus	0 11*	0 11*	—	0 11*	0 11*	0 11*
Randfontein Centrals		12 6*				13 6†
Do. Estates	19 7*	20 3	20 6	20 6*	20 0	19 9*
Rouxville Dmds.	1 0*	1 0*	1 0*	1 0*	1 0*	1 1*
Roberts Victors			8 0†	—	—	8 0†
Robinson Deep "A"	34 6*	35 3	35 0*	35 0*	35 0	34 9*
Robinson Deep "B"	12 0*	12 0*	12 0*	12 3	12 1*	12 0*
Rooibergs	3 0*	3 0*	3 0*	3 3*	—	3 1*
Shebas					2 11†	—
Simmer and Jacks	3 0*	3 0*	3 0*	2 11*	2 11*	2 11*
S.A. Breweries	31 9*	31 9*	31 6*	—	31 6*	32 0
S.A. Lands	3 5	3 4*	3 5	3 4*	3 5	3 5*
S.A. Reserve Bank	£135*	£137	£137†	£137†	£135*	£136¾*
Springs Mines	47 6	47 6*	47 3*	47 9	48 0†	47 3
Sub-Nigels	10 0	10 1½	10 3†	10 6	10 3*	10 0*
S.A. Alkali	12 0*		—	12 0*	12 0*	11 6*
S.A. Townships	10 9*	11 3*	10 6	—	10 6*	—
Transvaal Lands			18 0†	—	18 0†	18 0†
Transvaal G.M. Est	8 6*	8 9*	8 9*	9 6†	8 9*	
Transvaal Silvers	—	—	13 9*	13 9*	—	—
Union 5 per cent.	£100¼*	£100¼*	£100	£101*	£101¼	£101*
Van Dyks	0 9*	1 0*	1 0*	1 0*	1 0*	1 0*
Van Ryn Deeps	68 0*	68 9*	68 9*	69 0*	68 3*	68 6*
Van Ryn Estates	—	14 6*	—	—	—	—
Village Deeps	12 0*	12 3*	12 3*	12 6*	12 6*	12 6*
West Springs	19 6*	19 7	18 7*	19 9	19 7½	19 3*
West Rand Cons.	5 6†	5 6†		5 3*	5 6†	4 9*
Western Rand Est.	—	2 11†	3 0†	3 0†	2 6†	2 6†
Witbank Colls.	31 0*	32 6	34 0	—	—	32 0*
Witwatersrands	15 0*	15 6*	16 6	16 0*	15 6*	15 9*
Wit. Deeps	16 0	15 9*	16 0	16 0*	16 0*	16 0*
Zaaiplaats Tins	4 6*	4 6	4 3*	4 3*	4 3*	

* Buyers. † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

New Construction Work at Randfontein Central.



New Workshops at North Incline Shaft, to concentrate work from all workshops in the section.

The Demand for Diamonds.

Opinions differ in regard to the immediate prospects of the market for diamonds. Thus, a correspondent writes to the *D.F.A. Advertiser*: "Your report of a favourable outlook has been a veritable bombshell in this local market. The earnest wish of all is that it was true. The following is an extract from Europe: 'With regard to business, everything is very calm. Big rough goods are difficult to sell. America is quiet, and I believe it will remain so during the summer months.' Whence comes the 'demand' for diamonds,' as given you by Reuter's Special Service?"

* * *

Messina (Transvaal) Development Co., Ltd.

The report for year to June 30, 1922, states ore reserves at that date were estimated (in long tons): Proved ore, 174,670, of 3·96 per cent. copper; probable ore, 161,190, of 3·23 per cent. copper; possible ore, 241,872, of 2·69 per cent. copper; total, 577,732 tons of 3·23 per cent. copper, of which 93,523 tons of 3·59 per cent. copper was broken ore in stopes. Conditions for production being so unpropitious, all possible steps were taken to reduce expenditure, and policy adopted was to close down as far as possible without allowing of injury to surface or underground workings.

It is of such importance to the Messina district that the company's mines should be in operation that assistance from the South African Government was asked for in order to restart operations, and as a result the Government agreed to pay a bonus of £5 per ton of copper produced up to 2,000 tons, which amount of copper was required for the electrification of a section of the Natal railways. Government further agreed to relax the strict application of certain clauses of the mines and works regulations, which is a matter of considerable financial importance to the company. In consequence of the better conditions produced by the above, instructions were issued towards the end of the year to re-engage the staff and resume operations.

As intimated in last report, the whole of the excess profits duty paid by the company has now been repaid, and £63,532 appears on credit side of profit and loss account. This makes, with amount brought into last year's account, a total repayment of £123,128. Income-tax liability to April 5, 1922, for which £51,000 was reserved in last account, was finally agreed at £47,971, with result that £3,029 comes back to credit of profit and loss for this year.

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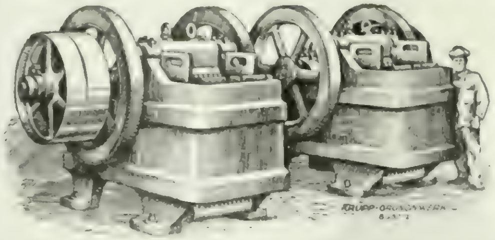

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TOPICS OF THE WEEK.

Taxation and the Mines.

The mining industry has bulked largely in the debates of the closing days of the present session of the Union Parliament, and the true facts of the position have, at any rate, been ventilated. Mr. Alex. Aiken made a valuable contribution to the discussion in a paper read during the week, and the admission by the Union Government that the taxing powers of the Provincial Councils would have to be investigated during the recess is a belated sign of enlightenment. In this connection we may quote some pertinent remarks made by the Chairman of the Anglo-French Exploration Co., Ltd., in mail week.

"Our holdings in South Africa," he said, "have been reduced during the year and now stand in our books at under £300,000, which is the lowest for many years. Various things have influenced the Board in bringing about this reduction, quite apart from the intrinsic merits of any particular mine. There is still a smouldering discontent and unrest among certain sections of labour, notwithstanding the settlement arrived at after last year's strike—or attempted revolution. The tax collector there, as here, seems to have an insatiable appetite. Then, again, there is the enormous burden imposed upon the industry by the Miners' Phthisis Board, which levies a toll of £800,000 per annum from the mines. I may say that only a day or two ago we received a cable from Johannesburg stating that it is proposed to impose a provincial tax of 1s. in the £ on dividends distributed by financial companies such as ours after 31st May. And so it goes on. There seems to be no limit to the burdens placed upon the mining industry, while the attitude in the Union Parliament on the part anyway of a large section of its members may, I think, be said to be anything but sympathetic. Such things cannot fail to have a disturbing effect on the minds of investors, and in our case they have influenced us in reducing to some extent the number of eggs in our South African basket. As one of the papers put it, "rightly or wrongly," we have made certain realisations—acting, I may say, with the full concurrence of our Johannesburg office. These realisations involved a loss of roughly £27,000, which coming in a year when the amounts received in dividends were nearly £20,000 less, has had the effect of placing our balance in the profit and loss account for the year on the wrong side."

Delagoa Bay & Transvaal Coal Trade.

The important speeches made at the banquet given by the contractors to celebrate the official opening of the new Delagoa Bay coaling plant will be found fully reported in another part of this issue. The sentiments expressed by the Chairman, Mr. Colin J. Simpson, by the Acting Governor-General of Mozambique, by Mr. John Roy, Chairman of the Transvaal Coal Owners, by Mr. Ferreira, and Mr. Wm. Pott, it will be seen, were all couched in most felicitous terms, the keynote being confidence in the new era dawning for the Transvaal-Delagoa Bay coal trade. The Portuguese Administration has certainly done its share and, in its own interest, the Transvaal coal industry will loyally second these efforts to regain the coal trade of the port, and to go forward to greater things. For the rest, the speakers may be left to speak for themselves, though it may be emphasised that they breathe a spirit of co-operation and unanimity that augurs well for the future of all the interests concerned.

The Cost of Mine Stores.

Plain speaking was the keynote of the addresses at the informal function at the Witwatersrand Commercial Exchange last week. Thus, in the course of his speech, Sir William Dalrymple said the cost of mine stores to-day, as compared with 1914, was "simply horrible," and he plainly warned sellers that they would have to bring down their prices or they would lose "an awful lot of trade." Not that it would go elsewhere; it would simply come to an end, because there were many low-grade mines that could not continue operations at present costs. It was probably true that in time Johannesburg would become a great distributing centre, but that time was not yet, and, in the meantime, there was, he feared, going to be a period of great difficulty. "We have got to get the frills off," said Sir William. "We have been living up in the clouds too long because we are a gold mining centre. But we have got to cut our expenditure, both individual and public, and, in particular, we have got to keep hammering at the Government and Provincial Councils and the municipalities. It seems to me that the main industry of this country is politics." They must go back to sound economics, and he associated himself with the views held by Mr. Hirst and Mr. Samuel Evans that the country would find its salvation in an early return to gold currency.

The Miners' Phthisis Sanatorium.

Sir Julius Jeppe, who presided at the annual meeting of the Transvaal Miners' Phthisis Sanatorium this week, gave an interesting account of the activities of that institution, which is doing such splendid work. He showed that there had been an increase in the number of patients during the last year. Accommodation existed at Springfield for 91, and the average number had risen from 75 the previous year to 85 for the year under review, the average number of non-miners being 10 and 11 respectively for the two years. As the sanatorium had been built for treatment of miners, Sir other hospitals. The accommodation was overtaxed, and admission consequently had to be refused to certain necessitous applicants. The directors had approached the Chamber of Mines and the Government in September last with a view to increased accommodation. The Chamber, however, put the position that they had provided the whole capital cost of the institution, £52,000, and they did not feel justified in undertaking further expenditure while more patients could be accommodated. The Government's reply was that funds were not available. The only course, therefore, was to reduce the number of Government patients. The chairman quoted from a report of the Government Medical Inspector of Transvaal Hospitals, who stated as his opinion that it was not right that as the institution increased the burden should fall more heavily upon the Chamber, since Springfield takes care of all the pulmonary tuberculosis cases that must be treated either at Springfield or at the General Hospital. He considered it would be fair if the Government bore at least a half-share of capital expenditure. The increased percentage of discharges and lower death-rate, Sir Julius Jeppe stated, were gratifying, although the latter could be improved if more patients applied for treatment before they were beyond medical aid.

As Others See Us !

A dispassionate review of the course of the market in Rand mining shares in a London contemporary concludes as follows:—"On the whole there appears to be nothing in the economic position of the Rand industry to modify the bullish views that prevailed last autumn, and if that be so, the set-back must be attributed to other influences. Of these the most obvious is financial. In the flood-tide of speculative enthusiasm Johannesburg absorbed an immense number of shares of the low-priced category especially, and the assimilative capacity of that market is not unlimited. Indigestion, with its consequences naturally followed. Then the vagaries of the franc have tempted certain Paris operators to use the favourite Rand shares as counters for speculating in the ups and downs of the exchange, while on our own Stock Exchange a little disgruntlement seems to have been caused by the discovery that the big finance companies last year enhanced their profits substantially by realisations. Yet, after all, this is one of the functions of a finance company, and the accumulation of liquid funds is clearly a desirable step in view of the imminent need for capital to further develop the Rand goldfields, development that will be forced on the Rand interests by the growing rivalry of the Canadian fields. It may be that the finance houses are not anxious to see an active Kaffir market at the moment, as there are several points at issue with the South African Government relating to the heavy burdens imposed on the industry and the financing of the unallotted State-owned areas, but, taking all the factors into consideration, it is wholly unlikely that the present depression is more than temporary, or that it will be encouraged to persist for very long. Thus the set-back offers an opportunity to those who have the courage to face the risks inseparable from the mining market. The opportunity seems to lie rather distinctly in the direction of the best finance shares rather than in those of the individual mining companies." Of course this was written before anything was known in London of the latest Provincial Council attempted raid upon the purely financial companies.

Rhodesia and Mashonaland Railways.

Special interest attaches at this juncture to the latest annual results published by the railways of Charterland. The considerable improvement which is shown in the operating results of the Rhodesia Railways for the year to 30th September last is entirely due to lessened expenses, for the gross revenue declined from £1,643,769 in 1920-21 to £1,580,175 in 1921-22. The ratio of expenses to receipts, however, fell from 74 per cent. to 69 per cent., this being attributed to lower wages and general economies. After allowing £237,224, or practically the same, for depreciation, the net operating revenue amounts to £495,335 against £442,052. Of this £264,000 is absorbed by debenture interest and £150,000 by joint note interest. The latter calls for more than a year's life, and taxes require a little more also, so that the year's surplus revenue, which goes to swell the amount carried forward, is £37,329 against £45,290. This brings the credit forward to £253,865. For the first six months of the current financial year the tendency shown in the latest accounts continues. Gross takings still decrease slightly, but expenditure is falling more substantially, and the net revenue for the six months to 31st March consequently shows £50,000 increase at £250,000. Despite this, however, it is possible that the 5 per cent. debentures, which do not enjoy the guarantee of the Chartered Company, and rank after the 5 per cent. and 4 per cent. issues as regards the "new railway undertaking," have a slight tinge of speculation. They bear no definite date of redemption, and yields 5½ per cent. at 89xd. The 4 per cents., giving over 5 per cent. at 79½ and allowing for redemption in 1949, are guaranteed by the Chartered Company, and appear better value. However, the best security associated with the company, though this is a short term investment, appears to be the 6 per cent. tax free joint notes, which are also an obligation of the Rhodesia Railways Trust, have the Chartered Company's guarantee, and yield 7¼ per cent. gross at 106, though allowance must be made for loss on redemption, which may be effected at 103 per cent. after 1925, or definitely at par in 1931. The Mashonaland Railway did not fare so well during the year to 30th September last as the Rhodesia Railways, the ratio of expenditure remaining practically stationary in this case. Gross receipts declined from £767,990 to £713,128 on the Beira-Salisbury section, whose receipts have to be shared with the two Beira companies; while on the Kalomo-Broken Hill line, receipts from which accrue entirely to the Mashonaland company, the gross takings rose a trifle from £411,493 to £415,534, owing to the greater volume of copper and lead export traffic. In the final result the net operating revenue of the Mashonaland company is practically unchanged at £334,026, of which debenture interest again takes £253,000. The fact that the year's net surplus over fixed charges and taxes is increased from £42,011 to £50,740 is due entirely to higher miscellaneous receipts, and so is of no significance. The company has a huge accumulated debit balance which is now reduced to £1,582,424. There is a loan from the Rhodesia Railways Trust which amounts to £1,423,000. In the first six months of the current financial year traffic reveal some improvement, the two principal sections showing an aggregate increase in net earnings of some £20,000.

A Commercial Exchange Function.

Mr. W. McEwen, the President, had something of very direct interest to say at an informal gathering of members of the Commercial Exchange last week. In dealing with the relations which existed between the Government and the commercial community, Mr. McEwen said that he could not find that any particular consideration was given to commercial men. In fact, the commercial community seemed to be a very suitable body from which to extract taxation. It seemed to him most extraordinary that they had not a Portfolio of Commerce. He would like to compare the position in England with that ruling in South Africa. In England, in spite of the huge amount of debt incurred in the late war, and the depression in trade, it was found that the British Government was helping the commercial man and was reducing his taxation. In this country the Government was found to be piling up public expenditure out of all proportion to the population of the country. He threw out the hint to the "powers that be" that if commercial men were to be expected to do their duty by the State then they must be given time in which to breathe, and time to expand their business on business lines. With taxation as it was at present, there was not a single importer in this country who could tell the true cost of his goods landed in Johannesburg, because he did not know what taxation and other charges were to be put on. With surprising moderation, Mr. McEwen declared, in conclusion, that was a most undesirable state of affairs.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

SOUTH AFRICAN INDUSTRIES.

SPECIAL COTTON AND RUBBER ARTICLES.

Next week's issue of the "S.A. Mining and Engineering Journal" will contain special illustrated articles on the Cotton and Rubber Industries in Natal. These have been written by a travelling commissioner of the Journal, who has recently made detailed investigations on the spot in regard to these important branches of commercial activity in South Africa, and they will be found to contain a great deal of very important and interesting information.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal will shortly be visiting Rhodesia with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

The Central Mining Meeting.

Owing to extreme pressure on space the proceedings at the annual meeting of the Central Mining and Investment Corporation are unavoidably held over until next week.

* * *

New Vaal River Barrage.

It is announced that the Vaal River Barrage will be formally opened on July 27 by H.R.H. Prince Arthur of Connaught. Afterwards the pumping station at Vereeniging will be opened, and the Vaal River water will join up with the Water Board's system.

* * *

The Forthcoming Economic Conference.

We welcome the news (first mooted in "The Times" Trade Supplement) that at the forthcoming Economic Conference in London, the Trades Commissioners of the British Government in various parts of the Empire are to be present. The Trade Commissioners are a body of men who have done magnificent work in the face of great difficulties, arbitrarily imposed limitations and much misinformed criticism. They are the complement in the Dominions of the economic side of the High Commissioners' work in London; and just as it is necessary to have the views of the High Commissioners as to the Mother Country in its relations with the Overseas Empire, so it is equally necessary to have the views of these experts upon the various Dominions and Colonies in their relation to the Home country and to each other. In both cases a detached and unprejudiced view should be obtained. It is important from the inter-Dominion standpoint to remember that many of these officers have served in several parts of the Empire

The Robinson Case.

The question between the Johannesburg Town Council and the Robinson Gold Mining Company, relating to the main outfall sewer on the Robinson ground, which is threatened by subsiding land, has been settled by a decision to deviate the sewer at the cost and direction of the Council, minus a contribution from the company of £5,750 and perpetual servitude over the land traversed by the deviated sewer.

* * *

Consolidated Main Reef.

In view of the loss which it is expected will be made during the current month owing to the breakdown of the hauling engine at No. 3 shaft, of which shareholders have already been advised, and of the advisability of maintaining a strong financial position owing to the necessity for maintaining an extensive scale of development and the amount still to be expended on capital account, the Directors have decided not to declare a dividend for the half year.

* * *

Sekenke Gold Mines.

Messrs. Butler and Schwentafsky have acquired the well known Sekenke Gold Mines and are proceeding almost immediately to that property to commence operations. This well-known Tanganyika Territory mine, besides employing a certain number of Europeans, will find work for several hundreds of natives, so that a considerable amount of capital will be kept in the country. The proprietors are sure of the successful outcome, as the mine is well known to the owners. There are many more similar concerns lying dormant in the territory well worth attention. The facilities of working compare well with those of any undertaking in the world. Investigations as to the resources of this country have so far been very limited.

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One of the big possibilities of South Africa's industrial future is the manufacture of asbestos productions. Every year indeed almost every month fresh uses are found for this wonder material of the mineral world. It is at once fibrous and crystalline, elastic and possessing relatively much tensile strength—a mineral with the appearance and texture of fine silk, it can be spun and woven. A non-conductor of heat, asbestos is equally serviceable for pipe and boiler insulation where heat has to be kept in, or for the lining of refrigerators where it has to be kept out. It is unaffected by acids, fumes or sea air; it cannot burn, and is proof against rust and white ant attacks. You can be housed, and if need be, even clothed in asbestos.

The S.A. Mining and Engineering Journal has from time to time given particulars of the mining of asbestos and the discovery of new deposits in this country. In the Cape Province asbestos production commenced thirty years ago. More recently very promising deposits of excellent quality have been found in the Transvaal and Natal; Mozambique and Rhodesia also furnish increasing supplies. Southern Rhodesia, which ten years ago yielded only 259 tons of asbestos in the twelve months, has in recent years shown an annual production averaging about 12,000 tons; the production in the Union has increased tenfold in the decade, and recently averages about 3,500 tons per annum. But this latter figure is still something like 100,000 tons below Canada's production, which represents more than two-thirds of the world's total output.

Big Developments Anticipated.

The South African supplies have recently, however, attracted considerable attention, and there is every reason to anticipate a very rapid development of this industry in the next few years. The asbestos found here is of very widely varying quality. Half a dozen different varieties are found in the Transvaal alone. The best and most important is known as chrysotile, and a very good second is crocidolite or blue asbestos—in appearance one of the most beautiful deposits the earth yields; then there is amosite, while three varieties of less value are tremolite, actinolite and anthrophyllite. Asbestos is judged by its chemical and physical properties—the length of the fibre is an important factor—and, generally speaking, it may be claimed that the quality and length of the South African fibre is second to none, and there are immense areas at present undeveloped.

Our present concern, however, is more particularly with the manufacturing processes which follow its recovery from the hard serpentine rock from which the fibre is mined. At present there are only two or three factories in South Africa making asbestos productions, but with such a plentiful supply of the raw material it will inevitably prove a more profitable proposition to develop the manufacture rather than the export of this remarkable commodity which serves such a multitude of purposes. One of the best known and most serviceable of these purposes is the production of sheets and tiles composed of a combination of cement and asbestos. This makes a durable, cheap and easily worked building material, for walls as well as roofs.

A Simple Process.

The process of manufacture is a very simple one. The raw material is first crushed and fiberised, and all foreign elements eliminated without destroying its fibrous qualities. It is then beaten to a pulp and mixed for about fifteen minutes with Portland cement (also, of course, a South African product). At this stage, if red tiles are to be made, a small quantity of powdered red iron oxide is added. The mixture is then conveyed by flumes to a machine which turns out the pulp in large slabs. These are placed in an edge trimming machine for squaring or cutting into tiles, and thence to an hydraulic press, where the slabs are pressed between steel plates. The finished slabs or tiles are then "cured" by being kept in a drying shed for about two months, after which they are ready for use.

The machine which converts the pulp into slabs is most interesting in its operation. One of the rollers picks up the asbestos-cement pulp and spreads it layer upon layer on an endless travelling belt. From this it passes to a steel collecting drum. When the pulp is of sufficient thickness a bell rings and the operatives strip it off in the large slabs. Sheets may thus be turned out in varying thicknesses—say from one-eighth to one inch—by increasing or reducing the number of layers of pulp. Millboards made entirely of asbestos fibre are also made, and for this and the asbestos cement products there is an almost illimitable variety of uses, apart from building purposes. Among a few of such uses are door panels, chair seats, cattle and poultry troughs, road signs, filing cabinets, table-tops, basins and dishes, school blackboards.

Plant Will Be Required.

As may be realised, the development of this industry will call for installation of plant on a fairly considerable scale, as the processes are largely and necessarily mechanical. The pioneers in this industry are The Asbestocement Manufacturing Co., Ltd. Their plant has a capacity of over three million square feet of asbestos board per annum; it comprises three slab-making machines, hydraulic presses capable of 12,000 lbs. pressure per square inch, fiberisers, mills, machine cutters, concrete vats, pumps, etc.

An Overseas Example.

Promising as is the start which this industry has made in South Africa, it has yet a lot of leeway to make up before it attains to anything approaching its dimensions in Canada and America, where it supports an interesting monthly journal. In Australia the asbestos industry has also made remarkable progress, and the principal manufacturers there issue lavishly illustrated brochures which convey the impression that as a sumptuous as well as a serviceable building material asbestos has no equal, and the reader is left wondering how the world has managed to get along so well without such an indispensable adjunct of civilisation. It is not suggested that the American and Australian manufacturers turn out a better product than the South African factories, but they certainly display commendable enterprise and ingenuity in proclaiming the merits of the material, and it will not be their fault if the world does not advance to an asbestos age.

In one particular Australia furnishes an example that South African manufacturers would like to copy. Its asbestos-cement productions are carried on the New South Wales Railway in 8-ton lots at a rate of about £1 for 300 miles. Such a rate applied to the Durban-Johannesburg run would work out at about [illegible], whereas the actual railage on such a consignment would amount at existing rates to something like £66. In the present selling price at Johannesburg 25 per cent. is represented in the railage from Durban.

MORE ABOUT TORBANITE.

Further Experiments in Johannesburg — Commercial Production This Year—Another Consignment for Tests in England.

The development of the torbanite resources of South Africa is again attracting some attention. It is now recognised that this is [illegible] a proposition to be adequately handled by the comparatively small syndicates with limited financial resources which have up to the present been operating in an experimental way, and steps are now being taken to consolidate these interests and raise capital. Mr. G. A. Troye, an engineer who is well known on the Rand, has been discussing this matter with a representative of *The S.A. Mining and Engineering Journal*, and gave the interesting information that before the end of the present year a small plant will be operating on a commercial scale, and that it is hoped to deal initially with fifty tons of torbanite a day. The yield of oil from this torbanite will be distributed among motorists and others with a view to proving that South Africa can produce petrol and other oil, both light and heavy, of a quality that will challenge comparison with that from any other source of supply. There are, says Mr. Troye, about 10,000 acres of coal in the Ermelo and Breyten district in which a couple of dozen boreholes have been sunk. On the results obtained therefrom Mr. Troye bases his estimate that there are over twenty million tons of torbanite in this area. He considers he is very conservative in putting the yield at 80 gallons per ton of torbanite; in experimental tests this yield has been exceeded by 50 per cent. A small plant on the Hoper Lamplough process of extraction has been in operation in Johannesburg for about two months, and this plant is now being replaced by another, which is said to be of simpler design, and the invention of a Johannesburg man. It is understood that this operates on a similar principle as that of the ordinary coal-gas retort, with certain modifications, but the extraction of the oil is a somewhat slower process by this method.

While experiments are proceeding in this country, inquiries are also being prosecuted in England, and a cable has just been received from Major Arthur Struben, who is associated with Mr. Troye, that he is very hopeful of the suitability of a retorting and refining plant that he has been investigating, and he asks for a consignment of thirty tons of torbanite to be at once shipped for tests.

Letters to the Editor.

SILICOSIS IN ENGLAND.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—In your review of Dr. Watkin Pitchford's lecture on "Miners' Phthisis" in the issue of June 9th a short reference is made to the fact that this disease exists in England but is hardly recognised there.

It may interest your readers to know a little more about its occurrence in English industries. In the manufacture of sewing needles, for instance, a trade that has been centred at the little town of Redditch, near Birmingham, for many generations, one of the most important operations is the pointing of the needles. This is highly skilled work, as a batch of 100 to 200 needles are pointed at one time by the workman, who holds the ends of the needles against a swiftly-revolving grindstone, at the same time rolling them round between two pieces of wood so as to grind them all uniformly. The whole operation takes but a few seconds, and is accompanied by a miniature pyrotechnic display, showers of incandescent steel particles flying off the stone. The pointing is always done (or was a few years ago) on a dry stone.

Fifty or more years ago the grindstones were turned by hand with a simple multiplying gear; the needle "pointers" earned £2 to £3 per week, a very high wage in those days; few of them lived to reach thirty years of age, their motto being a short life and a merry one. They died of lung troubles, "consumption" as it was called then, and it was universally considered that it was the sharp steel filings that destroyed the lungs; no one dreamed that the destructive agent was the fine silica powder from the grindstone. There was in those days, of course, no question of "dangerous trades" or "compensation."

Machinery, steam engines, and so on, came very late into the needle-making industry, which was largely a "home" industry. Soon after power had been introduced, one needle manufacturer placed a fan behind each grindstone to carry off the dust. I am not sure whether he was in advance of the law which made the use of fans compulsory. The result was a riot among the "pointers," who smashed all the fans because they considered a possible lowering of wages of greater moment than a lengthening of their own lives. However, the law and the fans eventually prevailed. I believe an exactly similar sequence of events occurred among the Sheffield cutlery grinders, who, of course, suffered in a similar way from silicosis.

I am,

Yours faithfully,

E. G. BRYANT

Electrical Goods.

There is no alteration to report in these; prices locally and overseas are about the same. Dealers, however, report, in common with others, that cash is scarce.

FOR SALE

(a) 2 Sets **Compound** (Marine Type) **Steam Engines** direct coupled to alternators. 75 K.V.A. 2 phase, 25 cycles, 170 amps. With E.5 type Exciters. 120 lbs. pressure per square inch. Non-condensing.

(b) **Control Instruments**, switches, fuses on slate panels for above, arranged for 4 motor circuits and 2 lighting circuits.

(c) 2 **12 h.p. Electric Motors,** complete with starting gear, A.C., 25 cycles, 220 volts.

(d) 4 **20 h.p.** ditto.

(e) 1 **30 h.p.** ,,

All above by Messrs. Mather & Platt, Ltd., Manchester.

(f) 1 **20 h.p. Electric Motor,** complete with starting gear, A.C., 25 cycles, 220 volts.

By Messrs. British Thomson-Houston Coy., Ltd., Rugby.

Have all been in Operation and in First-class Running Order and may be Viewed by Appointment.

TELEPHONE No. 391

THE UNITED TOBACCO COS. (SOUTH), LIMITED,

207, Marshall Street ——— JOHANNESBURG

ENGINEERING SECTION.

Drill Steel; A Subject of Vast Importance to the Witwatersrand Mines.

ITS FORGING, HEAT TREATMENT AND TEMPERING.—SOME VALUABLE ILLUSTRATIONS.

By H. S. Brainerd.*

IV.

Most drill steel failures are induced either by fatigue or by incorrect treatment and abuses in the blacksmith shop. Fatigue failures are occasioned by physical defects in the material. There is a certain brand of Swedish steel on the market which is as near perfect as it is possible to make steel. When proper care is exercised in the forging and the hardening it will give very superior results but when treated carelessly it is not as good as a poor steel very carefully handled.

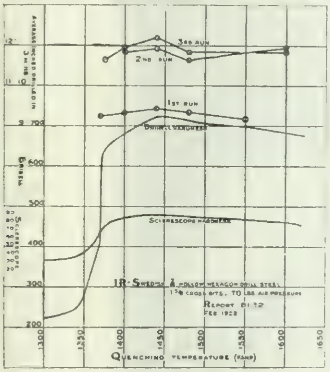


Fig. 23.

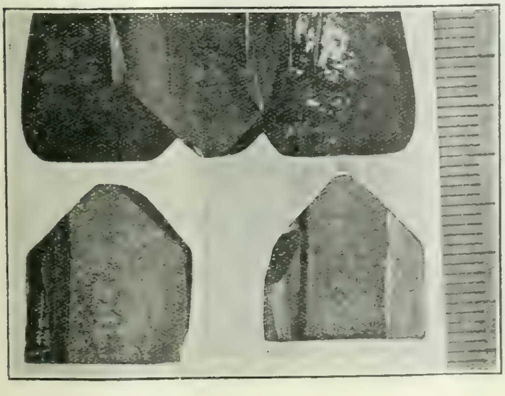


Fig. 24.

Tempering of Drill Shanks.

The average user of drill steel does not appreciate the importance of properly heat treating the shank, in fact, he gives the matter little or no thought. The tempering should be gauged with sufficient care to make sure that the shank will not be so soft that it will stick in the rotation sleeve or so hard as to cause the breakage of the drill piston. This is best accomplished for a ⅞ inch hexagon, hollow steel, by quenching in oil from a temperature in the neighbourhood of 1470 degrees Fahrenheit. For shanks of larger sections, however, a trifle higher temperature should be used.

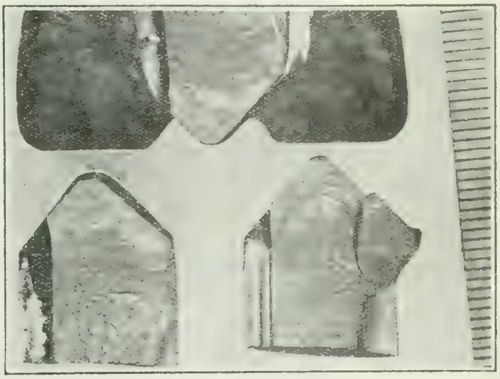


Fig. 25.

TIN PROPERTY FOR SALE.

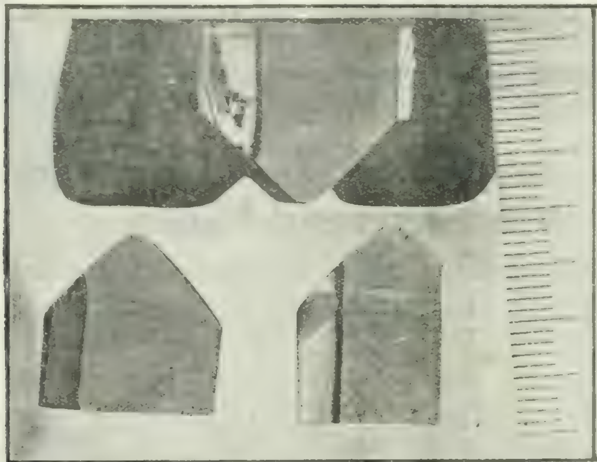
A large Farm close to Potchefstroom, with all mineral rights, on which a considerable amount of prospecting for tin has been done, and brought to the producing stage, together with an up-to-date battery and all necessary concentrating machinery ready for work.

Owing to illness of the owner, all work has been stopped.

ABOVE CAN BE OBTAINED AT A LOW FIGURE.

For Particulars Apply to:
W. SONNENBERG, Solicitor,
Box 22, POTCHEFSTROOM.

When testing for hardness, the [illegible] should be heated for a slightly greater distance from the [illegible] than it was heated for upsetting, and then quenched entirely in oil. The benefits that may be derived from [illegible] shanks in oil and overstepping the forging heat are shown by photograph No. 29. The coarse, brittle fracture of the shank as forged compares most unfavourably with the fine, tough fracture of the oil-treated shank. It can



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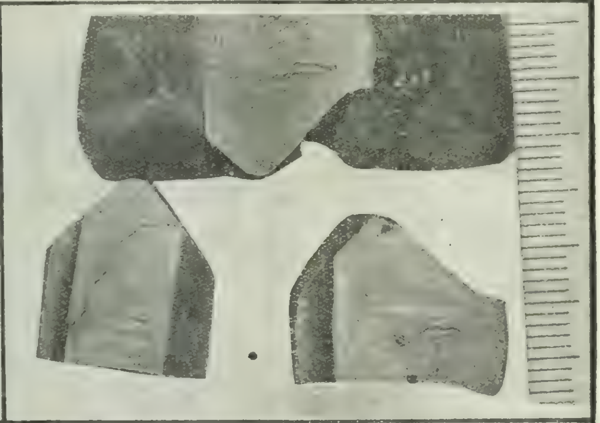

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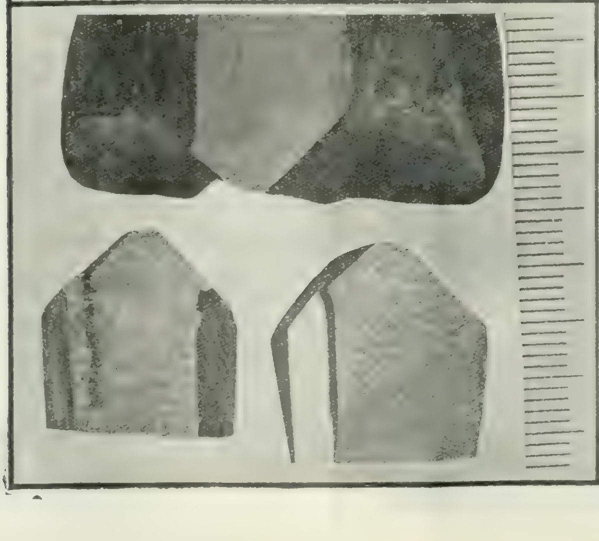

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readily be seen that short heating for hardening [illegible] to overlap the forging heat will lead to [illegible] whenever that all-important matter is neglected.

Photograph No. 30 shows the fracture of a shank which has been burnt. This steel has been exposed for some time to a heat considerably above the critical temperature. Steel in this condition cannot be restored, and is, therefore, worthless. The only thing to do with it is to cut off the burnt shank and to forge a new one, seeing to it that forging and heat treating are done at a proper temperature.

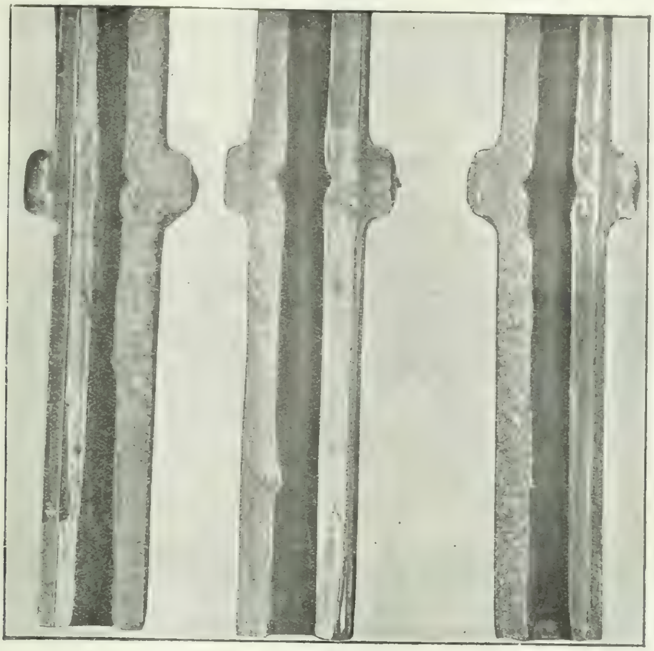

Fig. 29.

Forging heat not overlapped. Forging heat overlapped. As forged. No treatment.

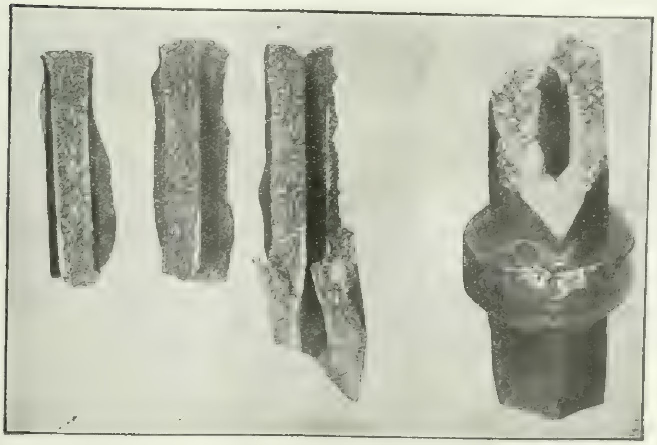

Fig. 30.—The fractured sections of a shank illustrating the effects upon the steel of excessive heating. The grain structure indicates that the metal has been burnt.

RHODESIAN MINING.

MR. D. V. BURNETT ON LOWER WORKING COSTS AND AID FOR PROSPECTING.

At the recent annual meeting of the Chamber of Mines, Salisbury, the President, Mr. D. V. Burnett, reviewed the position of the industry. Among the points he made were the following.

The promotion of active prospecting in Rhodesia is a matter of vital importance and one that should be encouraged to the utmost. Nothing is more apparent than the outstanding fact that the mining industry is the mainstay of the country, and it appears to be the natural course, therefore, for mining to be stimulated and fostered in every possible way. During last year the value of minerals produced in this country was just a little short of four and a half millions sterling, and one can readily visualise the great numbers of people in this territory who are dependent on, as well as those who are solely living on, the mining industry. It is therefore incumbent on the country to see that measures are introduced and adopted for the inauguration of an organisation which, by encouragement, expert advice and adequate financial assistance, will promote and foster prospecting.

Railways.

In spite of repeated joint representations to the railway authorities by your Chamber and the Rhodesia Chamber of Mines, the 33⅓ per cent. surcharge has not been removed, although reduction in wages and general economies must have reduced considerably the railways' working costs, which, if not justifying the total abolition of the surcharge, at any rate called for a more beneficial reduction in rates than has taken place. In view of the fact that to a very large extent, directly and indirectly, the railways depend upon the mining industry, the policy adopted towards that industry is somewhat incomprehensible.

The gradual fall of premium on gold, which for the quarter ended March 31, 1923, was only 3s. 8d. per fine ounce, must seriously affect the profitable working of mines in Rhodesia, and this is brought home to one when it is considered that the premium now only just about covers the increases over pre-war in exchange, refining and railage and freight charges. It is therefore necessary that working costs be reduced, and to accomplish this the industry requires reduced freight charges on mining stores and coal. At one of the mines represented on your Chamber coal in 1914 cost 22s. 9d. as against 30s. 1d. to-day, so it will be seen that the increase in one of the principal necessaries of mining is enormous.

The high cost of coal and the heavy transportation charge on it have forced mining companies to consider the use of gas engines with wood-burning producers, a fact which the railway and colliery companies would do well to consider, especially the former, when fixing the revised freight charges. There are, at least, two not unimportant mines using power derived thus, and others are making arrangements to do so.

Working Costs.

The development of new properties to a very large extent depends on the cost of working. Capital will not be forthcoming for the development of properties so long as the cost of working remains at its present high standard, except, of course, in the cases of mines sufficiently developed to render those providing the capital a commensurate security.

The reduction in working costs is of enormous importance to the progress of Rhodesia. I say this without hesitation, for I am firmly convinced that the reduction in costs would permit of capital being found for the opening up of new mines, resulting in employment for a larger number of Europeans, increased consumption of farmers' produce, and a greater circulation of cash in the country.

It has come to this stage now that the theory that the mining industry can continue to be the milch cow is decidedly out of date, particularly if the welfare of the country is to be considered. In fact, I think that instead of the usual cry, "The mines can pay more," it should be a cry with effort behind it of, "How can we decrease working costs at the mines in order that we may have more mines and improve the financial position of the country we live in?"

In conclusion, I would urge all members of the mining industry to put forth every endeavour to obtain lower working costs so that capital may be forthcoming for the development of further mines which will benefit the whole country. In this respect I throw out the following suggestions:—

(a) Greater efficiency in the working of the mines.

(b) Decreased railway rates on all mining materials and coal.

(c) The creation of a Government Department for prospecting with State aid.

The President took the opportunity of congratulating the Secretary for Mines on the honour bestowed on him by the King, and said he was sure all would agree that such honour was thoroughly deserved and would be appreciated by the mining industry. (Applause.)

Secretary for Mines.

Sir Ernest Montagu thanked the President and the Chamber for their congratulations, and said the chairman had referred to prospecting, a subject in connection with which he (the speaker) could not help thinking he had been a trifle to blame. A committee was asked for at last year's session of the Legislative Council, and only a small committee was suggested, amounting more or less to a departmental committee with one or two members of the mining industry added. He received various reports from members of the department, the Chamber of Mines, the small workers and others, including the Geological Department, but he was afraid they had not achieved very much, because in conversation with his mining friends he had been told it was a matter that justified more than a mere departmental inquiry. It was felt that if we were to advance there was no doubt that help from the State should be a matter for serious consideration. A change of Government, as they knew, was coming, and the opinion he rather formed was that a more representative committee should be appointed in order to deal thoroughly with the whole question, to deal not only with the help that should be given prospectors and small workers, but also with the important question of railway rates in order to encourage mining, for at present they certainly did appear to bear hardly upon it.

J.C.I. Dividend.

A dividend of 12½ per cent. free of income tax has been declared by the Johannesburg Consolidated Investment Co., Ltd., for the current half-year. A carry forward of approximately £172,000 is anticipated after making provision for the dividend.

TRADE SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS PRESENTLY QUIET, EXPECTED TO IMPROVE EARLY IN JULY—LOCAL QUOTATIONS UNCHANGED—IRON AND STEEL—HERE AND ELSEWHERE—BRITISH TRADE STATISTICS IN APRIL.

General.

Business locally at the moment is dull with, however, a few inquiries from Rhodesia and outside districts, together with the orders presently "chained," but which are expected to be released early next month, gives heart of grace to the mercantile community regarding early activity. There seems also a slightly better tendency in prospect in the country districts, reports from which are distinctly encouraging as to the crops about to be realised, the result of which is bound to be beneficial, not only to the country storekeepers, but eventually to the Rand. Much needed money will thus be circulated and help towards general betterment.

Commercial circles are looking forward hopefully to an early settlement of the vexed reparations question, which has so long retarded the world's progress, and hope that some *media* will now be found to settle it. One of the "biggest commercial brains" on the Rand this week thought not only that the European impasse would soon be satisfactorily tackled, but that local business conditions, after the turn of the half-year would also improve. Indications, he said, were not wanting that a period of slow but gradually improving business conditions was at hand. The present stock-taking month is, of course, never conducive to business activity. Once, however, we are fairly launched into the new financial year betterment, he confidently thought, will be our portion.

Engineering shops are fairly employed, and are looking forward to increased activity very shortly. Prices are, on the whole, unaltered, but, in the opinion of merchants, likely to recede somewhat in the near future.

Iron and Steel.

Quotations, in keeping with the character of the present month, has ruled in local iron and steel circles, the Commercial Exchange showing very little activity. Merchants in general anticipate increased activity next month.

The Week's Quotations.

These have not altered since last week:—

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes about 30s. a ton more; ⅞ and 1 in., 25s.; chequer plates, 27s. 100 lbs.; imported flats, ½ x 3-16, ⅝ x ¼, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1¼ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ¾ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ⅛, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ¼, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb; ⅝ up to 4½ in., 2s. to 2s. 2d. Fire-box copper, 1s. 9d. lb. Copper sheets, ⅛ up to 20 gauge, 1s. 8d. lb.; for lighter gauges 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. 8d. per lb. Phosphor tin, 2s. 10d. per lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅛, 7-5 16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3½d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in. to 36 in., 10s. 6d. to 11s. 6d.; 42 in., 20s. 6d.; piping, ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 56s. and upwards; barbed wire, "Shortthorn," 69 lb., 13½ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Second-hand Machinery.

Business this week in this section has been quiet, maintenance orders from the mines (June month) being on the quiet side. There is, said a prominent second-hand dealer this week, a scarcity of small boilers of 50-200 brake h.p., as well as engines. Previous to the war, he said, there was no difficulty in obtaining these; but, as previously stated—Johannesburg being the depôt for machinery of all kinds—this centre is being drained of all sizes now in requisition. Second-hand steel plates are still very scarce, as well as bar iron, round and flat. There has been a little flutter in batteries, inquirers not being content to buy the smaller mill, but wanting the present modern size of 1,750 lbs. There have been several inquiries for diamond drills, hand power, particularly in respect of diamond and gold mining in the north-western districts. These syndicates do not appear to be very flush, as they ask for terms. There are numerous prospects and small syndicates that would be glad to work some small mines, not only about the Rand, but Barberton way; but the unsettled state of the country, owing to the political position, does not give any encouragement to interest development. Second-hand dealers, with others, are looking forward to better business after the turn of the half year.

Britain: Mail Advices: Outlook in the Iron and Steel Market.

Prices were [illegible] during the last week of April by [illegible] per ton, and there is still a tendency towards weakness. It is doubtful, however, if much business has been attracted by these price reductions. British manufacturers, for the most part, are content to work on their contracts and to maintain prices. The problem as to whether prices have reached bottom is still puzzling the market. Coal supplies to the steelworks of France and Belgium are stated to be irregular, and the financial position on the Continent is, to say the least, unsteady, and prices must result from the low levels existing to-day. The London Iron and Steel Exchange in mid-week was quiet. British works are in a more favourable position, and for the most part have plenty of orders on their books, although in some cases they are looking for business.

Pig Iron.

The Continent [illegible] £6 [illegible], but business is dull. Offers of British basic at £5 17s. 6d. delivered Midlands have been received, whilst forge iron has been quoted at £5 2s. 6d. Midland No. 3 foundry has been sold at £5 7s. 6d.

Semi-Finished Materials.

Wire bars have been sold at £10 10s. Billets have been quoted at Continental works at £7 f.o.t. for 2 in. billets, to £6 15s. for 4 in. Welsh manufacturers have reduced the price of tinplate bars to £9 2s. 6d. per ton, and of sheet bars to £8 10s. Soft billets are quoted at £8 f.o.t.

Finished Materials.

Continental prices have been further reduced, and offers of steel bars were received in mid-week at £7 10s. per ton. Joists from the Continent have been offered at £7 10s., and channels at £7 17s. 6d. For the most part British works are holding their prices, having sufficient orders on hand to keep them going busy for some weeks. Steel bars, 3 in., have been quoted at about £10 7s. 6d. for export, and angles at £9 10s.

British Iron and Steel Production.

The production of pig iron in April amounted to 552,200 tons. The furnaces in blast at the end of April numbered 216, an increase of 14 during the month. The production includes 226,400 tons of hematite, 207,200 tons of basic, 144,700 tons of foundry, and 38,800 tons of forge pig iron. The output of ingots and castings increased to 749,400 tons.

Tinplates.

The Welsh manufacturers have agreed upon a sharp reduction in the selling price of tinplates from 24s. to 23s.

Quotations.

Staffordshire common bars 14s. 3d.; galvanised corrugated sheets 23s. per cwt.

Pig Iron.—Cleveland. Foundry No. 1, 130s.; No. 3, 125s.; No. 4 forge, 117s.; mottled, 112s.; hematite, mixed Nos., 122s. Finished iron and steel.—Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £9 10s.; hard, £10; bars and angles, £10; tees, £11; joists and channels, £10 5s.; sheets, angles, £11 10s.; [illegible], £15; lattens, £15 15s.; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots; mild steel fencing, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 6 to 7 gauge, 21s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 24s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 21s. per cwt. Bolts and nuts, 50 per cent. discount.

The average price of tinned and terne plate has risen from £21 6s. to £21 13s. 9d. per ton, and the average price of cast tubes, pipes and fittings from £13 1s. to £15 15s. Wrought tubes, pipes and fittings, on the other hand, fell in price from £2[illegible] to £28 [illegible] per ton. The decrease was, however, more than counterbalanced by a rise in the value of exports of steel rails, from £9 5s. 6d. to £9 1[illegible].

The Unemployment Barometer.

The number of persons on May 7 recorded as wholly unemployed on the live registers of the Employment Exchanges in Great Britain was 1,203,800. This was 14,167 fewer than in the preceding week, and 282,078 fewer than on January 1, 1923.

Cost of Living.

At May 1 the average level of retail prices of all the commodities taken into account in the statistics prepared by the Ministry of Labour (including food, rent, clothing, fuel, light and miscellaneous items) was approximately 70 per cent. above that of July, 1914, as compared with 74 per cent. at March 31.

Oils and Paints.

Motor spirit, 1s. 7d. to 2s. 2d. in cans; linseed oil: raw 4s. 3d., boiled 4s. 5d.; gas engine oil, 2s. 7d.; machine oil, 2s. 1d.; separator oil, 2s. 8d. to 4s. 1d.; colza (fine), 4s. 8d.; petroleum, 1s. 2d.; paints, in 5 cwt. lots, 74s.; red lead, 42s. 6d.; white lead, 45s. to 54s.; zinc oxide, 45s. to 55s.; turpentine, 9s. 1d. per gallon.

Germany: The Pig Iron Position.

The output of pig iron in Germany has decreased since the occupation of the Ruhr, and many furnaces have been damped down. At the beginning of the occupation the Pig Iron Association endeavoured to supply large stocks to the many foundries in the territory not in French occupation, preference being shown to the South German works, and at the same time the pig iron output of the works situated on waterways, in Upper Silesia, and in the Siegen district, was increased, so that unoccupied Germany was supplied in an unexpectedly liberal manner, and it was possible to reduce the imports of British and Czecho-Slovakian iron. Even to-day the running contracts are being fulfilled. After the establishment of the French customs cordon in the Ruhr works were compelled to store pig iron to a greater extent than before, as their consumption underwent a considerable reduction. The German smelting works are being well provided with foreign and domestic ores. The situation in the German iron market has changed for the worse within the last few weeks. Only 12,000 tons of pig iron are produced monthly from raw material of home origin and 10,000 tons of slightly different quality in the Siegen district. About 25,000 tons are imported directly, and the coastal works produce about 30,000 tons, but the latter must be sold entirely against exchange, as it is made from foreign ore and coal. On account of the new fall of the mark, the demand, especially for home-made iron of all sorts, has risen enormously, but the works have closed their books for the time being on account of the complicated situation. Since these reports the mark has again fallen tremendously; it is hoped, unlike Lucifer, to rise again. [illegible]

Prices Up All Round.

There have been fresh advances in the prices of iron. The Shahlbund has raised its quotations for semi-finished and rolled iron products by about 23 per cent. for Thomas quality, and the surcharge for bar iron of Siemens Martin quality has been changed at the same time from 175,000 to 200,000 marks per ton.

France: The French Steel Syndicate.

The *Comité des Forges de France*, the Great Syndicate of French Steelworks, will this month (May) elect its *commission de direction*, consisting of from 15 to 20 members, elected for three years by the firms which constitute the Syndicate. It is stated that the Creusot armour plate manufacturers have decided not to offer themselves for re-election, although their company will remain connected with the *Comité des Forges*. Since the return of Lorraine to France, the Creusot works and other steel works in the centre of the country have relatively lost much of their former importance as steel producers.

Belgium

Business has been disorganised by strikes. The port of Antwerp is absolutely blocked, and thousands of tons of iron and steel goods are lying on the quay.

Pig Iron.

Practically no business is passing in pig iron. Coke is coming along from the Ruhr at the rate of about 5,000 tons per week.

Russia.

The largest blast furnaces now blowing in Central Russia are at the Vyksunsk and Tashiysk plants. They are controlled by the "Gomza" Machine Trust, in whose works is produced almost half the output of open-hearth steel of the central district. Open-hearth ingots and rolled materials are also made at the Putiloff engineering works in Petrograd, the former Goujon works at Moscow, and the Dumot mills of Tzarytzin. According to official statistics, Central Russia in the year 1922 produced 23,350 tons pig iron, 98,630 tons open-hearth ingots and 70,000 tons rolled materials.

The Cost of Making Iron.

The organisation which controls the iron industry in Soviet Russia has published a memorandum on the cost of manufacture in the various ironworks of the country. The cost of producing billets in the works of the South and the Urals is about £8 5s. per ton, and in the works of Central Russia about £9 18s. per ton. But in these prices no allowance is made for the cost of administration or for depreciation of plant, which would probably add 20 per cent. to the prices.

Austria.

Pig iron production at the Alpine Montan-Geselschapt in February was the lowest recorded for many months, and the same is true of steel ingots. The February tonnage was 61 per cent. of the September output, and unfilled orders on the books of the company were 13 per cent. less than at the end of January. Prices are from 30 to 50 per cent. dearer than they were in January, and the industry is faced with huge difficulties.

Egypt.

The commercial representative of the French Government states that there is a good and increasing market in Egypt for imports of manufactured iron and steel. The imports of iron and steel wire in 1922 amounted to £E11,481; Germany being the largest shippers, and the United Kingdom being a good second. The position in respect of wire netting, which amounted to £E16,640, was reversed.

Canada: Electrical Apparatus.

The Canadian Westinghouse Co., of Hamilton, Ontario, has received, what is claimed to be, the largest order for electrical generators ever placed in Canada. The contract is for eight generators of the vertical waterwheel type, each of 30,000 k.v.a. capacity, for the power development plant at the outlet of Lake St. John, on the Saguenay River, in Quebec Province. The Westinghouse Co. have also received a contract from the Shawinigan Water and Power Co. for apparatus for the La Gabelle development at Grès Falls, Quebec, including four 45,000 h.p. vertical waterwheel generators, with transformers and switching equipment.

There is a marked improvement in the iron and steel trades. Constructional work is being undertaken on a large scale, additional contracts have been placed by the railways, and there is an active and increasing demand for machinery. The production of pig iron during March (65,297 tons) was greater than the output in any month since November, 1920. The total production of steel ingots and castings during the first quarter of the year was 183,580 tons, compared with 105,340 tons in the corresponding months of 1922.

United States: Pig Iron.

Prices are easier; basic 29 dollars, bessemer 30 dollars. Foundry iron at Western Pennsylvania, 31 dollars. Buying is quiet, and the output continues to be heavy. The high costs of production should prevent any marked drop in prices unless an unexpected falling-off in buying occurs.

Steel.

The steel mills are maintaining a high rate of production, the United States Steel Corporation operating at 97 per cent., and the rest of the trade averaging 94 per cent. of capacity. Some inquiry for delivery in 1924 has appeared from large consumers.

Railway Materials.

The total tonnage of purchases of rails this year is estimated to approximate 1,000,000 tons.

The United States Steel Corporation's unfilled orders for April amount to 7,288,509 tons.

British Overseas Trade in April.

These statistics show a fall of £3,500,000 in the value of total imports during the month, and an increase of about £2,000,000 in exports. Imports are now £15,000,000 lower than they were in January, and exports are £1,000,000 lower. Comparative total values of all imports and exports for the months of April from 1921 onwards are as follow:

		Increase or decrease as compared with	
	April, 1923.	April, 1921.	April, 1922.
	£	£	£
Imports	86,117,017	3,534,389	5,783,956
British exports	62,871,102	3,003,517	7,363,453
Re-exports	12,428,520	3,904,838	3,228,726
Total exports ...	12,428,520	6,908,355	10,592,179
Excess imports	11,118,415	10,444,744	11,807,223

Compared with the first four months of 1921, which mark the end of the "boom" period, the returns for the four months ended April, 1923, show a decrease in imports of £37,563,253, and in exports of £39,413,767. Compared with the first four months of 1922, which marked the extreme point of commercial depression, the new returns show an increase in imports of £45,718,954, and in exports only £6,670,103. Of the total increase of £220,000 in imports, iron and steel manufactures account for £100,000. As regards exports, raw materials have gained nearly £4,500,000 over April, 1912, and nearly £9,000,000 over the total for April, 1921. Exports of pig iron have risen from 89,356 tons in March, to 94,607 tons in April, the average price per ton being £5 15s. as against £5 6s. An increase of 158,179 tons in forge and foundry exports is the main factor in the increase in value of no less than £1,150,000 as compared with the same period of 1922. The market for iron bars, rods, angles, shapes, and sections shows very little change, though there have been increased shipments abroad.

Timber and Building Materials.

The timber trade continues satisfactory. Stocks are good, with the exception of a few sizes of scantlings, and should be normal within a few weeks. The building trade is exceptional in present trade conditions, and is buoyant, with full employment for tradesmen, and increased activities are awaited after the turn of the half year. Prices of building timber and bricks remain unaltered, with the former showing a firming tendency. Timber prices.—These have not altered since last week.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3½d.; flooring, 6d. to 6¼d.; ceilings, 4d. to 4¼d.; Oregon, 7s. 3d. per cubic, pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d. to 9d., very firm. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cubic Johannesburg. American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s., at coast. Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cubic at coast. Rhodesian mahogany, 9s. per cubic foot at mills. Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 3d. to 1s. 4d. per foot of 1 x 12, here; American pine shelving, 9d. per foot. 3 ply wood, 3in m. up to 5 in. m., alder and birch, 4d. to 6½d. per sq. foot; oak and teak 3 ply, 10d. per sq. foot. Brick Prices, etc.: Klompie bricks, 25s. per 100 at works, fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5, and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 6s.; 15 in., 7s. 6d.; 18 in., 9s.; dry red oxide, 14s. per 100 lb.; white lime, 7s. [illegible] plaster [illegible] 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement 9s. 9d.; [illegible] damp course and roofing, 30s. to 54s. [illegible]

Second-hand Iron and Timber.

Business in the second-hand yards is slow; prices are, for iron, 4d; timber, 6d. Dealers complain, as does everyone, of want of cash, but better things are expected next month.

The Simmer and Jack Proprietary Mines, Ltd.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty-[illegible] Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Consolidated Gold Fields Buildings, Simmonds Street, Johannesburg, **on Friday, the 28th September, 1923**, at 11.30 a.m., for the following purposes:—

1. To receive and consider the Reports of the Directors and Auditors, the Balance Sheet as at 30th June, 1923, and Statement of Income and Expenditure for the year ended 30th June, 1923.
2. To elect two Directors in the places of Messrs. W. S. [illegible] and D. W. [illegible], who retire by rotation, but are eligible and offer themselves for re-election.
3. To appoint Auditors for the current year and to fix the remuneration for the past year's audit.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from the 14th to 28th September, 1923, both days inclusive.

Holders of Share Warrants to Bearer intending to [illegible] at the Meeting must comply with the regulations concerning the issue of Share Warrants.

By Order of the Board.

NEW CONSOLIDATED GOLD FIELDS, LTD.,
Secretaries.
Per B. MALRAISON.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg.
19th June, 1923.

THE SUB NIGEL, Ltd.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty-fifth Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Consolidated Gold Fields Buildings, Simmonds Street, Johannesburg, **on Friday, the 16th November, 1923**, at 11.30 a.m., for the following purposes:—

1. To receive and consider the Reports of the Directors and Auditors, the Balance Sheet as at 30th June, 1923, and Statement of Income and Expenditure for the year ended 30th June, 1923.
2. To elect two Directors in the places of Messrs. D. Christopherson and W. A. Mackenzie, who retire by rotation, but are eligible and offer themselves for re-election.
3. To appoint Auditors for the current year, and to fix the remuneration for the past year's audit.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from the 2nd to the 16th November, 1923, both days inclusive.

By Order of the Board.

NEW CONSOLIDATED GOLD FIELDS, LTD.,
Secretaries.
Per B. MALRAISON.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg.
19th June, 1923.

APEX MINES, LIMITED.

(Incorporated in the Transvaal.)

DIVIDEND No. 34.

NOTICE IS HEREBY GIVEN that an Interim Dividend of 2½ per cent. (Two and a half per cent.) has been declared by the Board of Directors for the half-year ending 30th June, 1923, payable to all Shareholders registered in the books of the Company on the 30th June, 1923.

The Transfer Registers will be closed from the 2nd to the 10th of July, 1923, both days inclusive.

Dividend Warrants will be posted to South African Shareholders on or about the 16th August, 1923.

By Order of the Board.

H. CAMERON, Secretary.

Head Office: National Bank Buildings,
Simmonds Street, Johannesburg.
18th June, 1923. [illegible]

THE NATAL NAVIGATION COLLIERIES AND ESTATE CO., LIMITED

NOTICE OF DIVIDEND No. 41.

Shareholders are hereby notified that the Directors have declared a dividend of 5 per cent. (One Shilling per share) for the half-year ending June 30th, 1923, payable to all Shareholders registered as such in the Company's Books on the 30th June, 1923.

Dividend Warrants will be issued as soon as possible after receipt of returns from the London Office.

The Transfer Books of the Company will be closed from the 2nd July to the 9th July, 1923, both days inclusive.

By Order of the Board.

J. T. JONES, Secretary.
28 Natal Bank Chambers,
Durban, June 19, 1923.

BARNATO GROUP OF COMPANIES

Declaration of Dividends

NOTICE TO SHAREHOLDERS

NOTICE IS HEREBY GIVEN that Interim Dividends (free of Union Normal Income Tax) have been declared payable to shareholders of the following Companies who are registered as such at 30th June, 1923, as soon as the necessary returns are received from the London Office.

The Transfer Books will be closed from the 2nd to the 10th July, 1923, both days inclusive.

Holders of Share Warrants to Bearer will receive payment of the Dividends on presentation at the Head Office upon a date to be advertised, and at the London Agency, 10 and 11, Austin Friars, E.C. 2, on or about 25th August, 1923, of coupons numbered as shown below:—

Name of Company	Dividend No.	Bearer Warrant Coupon No.	Rate of Dividend	
			Per cent.	Per share.
GOVERNMENT GOLD MINING AREAS (MODDERFONTEIN) CONSOLIDATED, LIMITED	12	12	30	6s.
LANGLAAGTE ESTATE AND GOLD MINING COMPANY, LIMITED	64	53	10	2s.
VAN RYN DEEP, LIMITED	20	20	25	5s.
WITWATERSRAND GOLD MINING COMPANY, LIMITED ..	38	36	15	3s.

By Order of the Boards,

JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY, LIMITED,
Secretaries,

per FRANK HALL.

HEAD OFFICE:
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P.O. Box 590, Johannesburg.
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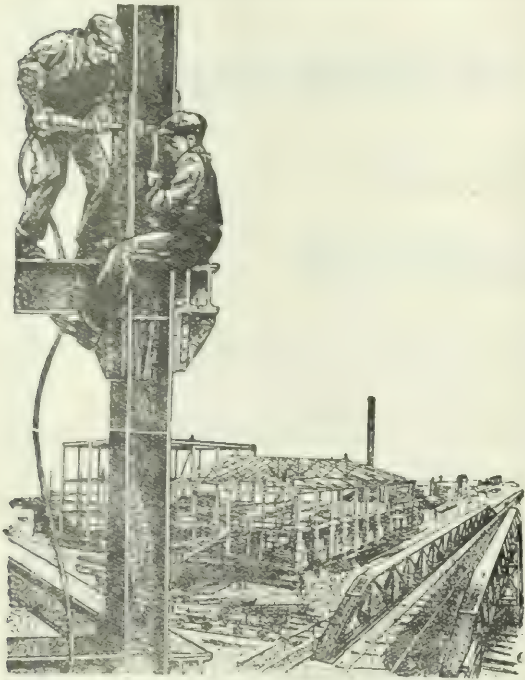

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Mr. Buckle Hits Out—The Howick Rubber Factory—Cotton Growing in Natal.

Industries The South African Commerce
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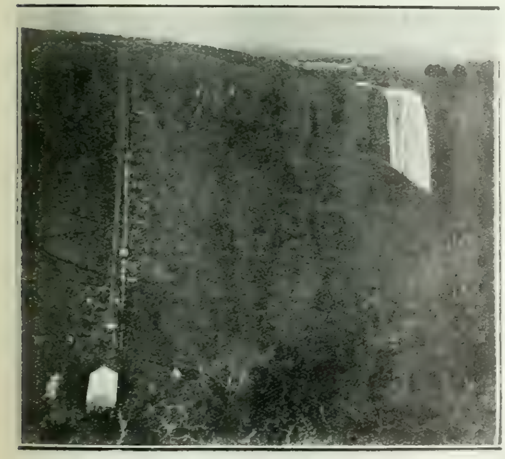
Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JUNE 30, 1923 No. 1657

Scenes at the S.A. Rubber Manufacturing Company's Works at Howick.



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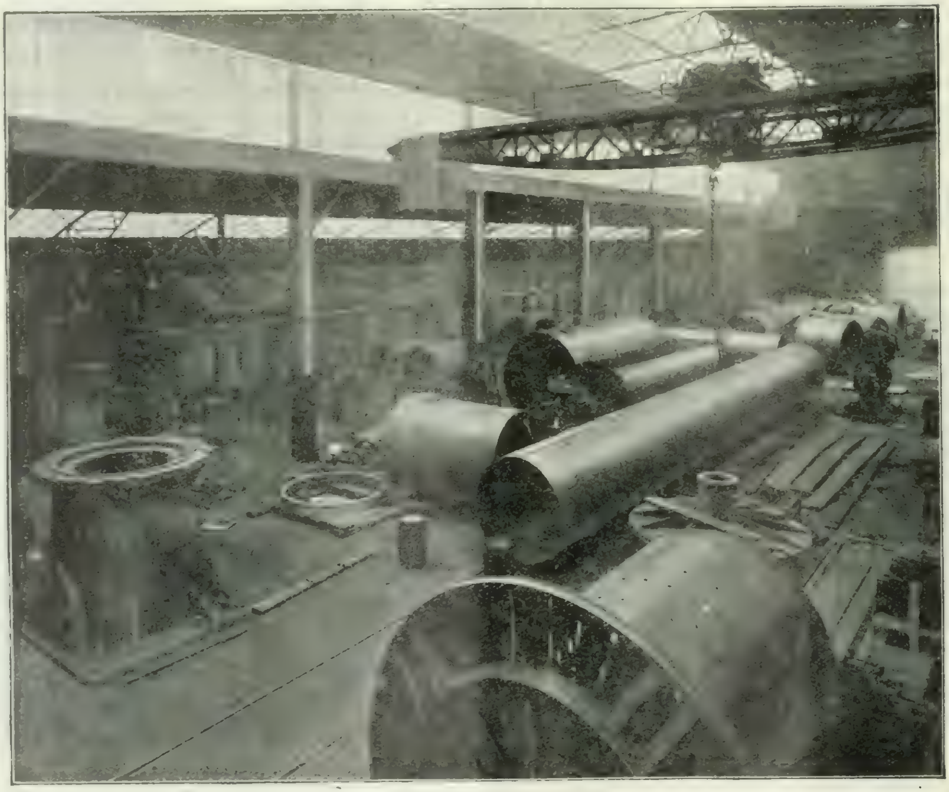

View of Work in Progress.

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SPECIAL INDUSTRIAL ARTICLES

The South African Rubber Manufacturing Company

HOWICK'S KEY INDUSTRY.

THE FACTORY AND PROCESSES DESCRIBED—IMPORTANT NEW ADJUNCT TO SOUTH AFRICAN INDUSTRIES—THE INDUNA MILLS AND THEIR PRODUCTS—WHAT THE RUBBER INDUSTRY MEANS TO THE UNION—A HIGHLY TECHNICAL UNDERTAKING—"EVERYTHING IN RUBBER FOR EVERYBODY."

(By our Special Commissioner.)

The picturesque hamlet of Howick lies three miles from Merrivale Station on the main Johannesburg-Durban railway line and about 14 miles from Natal's capital city—Pietermaritzburg. Past the village courses the Umgeni, which rises in Mont Aux Sources, not far from the head waters of another famous river of the Garden Colony—the Tugela. Hard by the village of Howick the Umgeni takes a 360 feet dive over an escarpment. The leaping waters form a charming and impressive picture and for years past Howick has been a spot favoured by trippers, holiday-makers and honeymoon couples. It has remained for a concern, formed under influential auspices with a substantial backing of capital and with a management that understands its business, to transform Howick from a slumbering and sleepy hamlet into a hive of industry, and, moreover, into what should rightly be regarded as one of the key industries of the country.

The establishment of a Rubber Industry at Howick has in no way affected the natural beauties of the place; and the utilisation of the water-power of the Umgeni, which for centuries had gone to waste over the edge of the falls, has in no way destroyed or even depreciated the attractions of this minor edition of "the smoke that sounds."

Howick, in fact, retains all the natural beauty with which it has been endowed, and at the same time has now become a place of no mean importance in the register of South African industries.

The Induna Mills of the South African Rubber Manufacturing Company comprise 14 acres and the buildings cover 140,000 square feet. The whole plant has been laid out on the most modern lines, and the machinery and methods of manufacture employed are essentially up-to-date in every particular.

The Howick works were inaugurated and are being operated under the ægis of "The Federated Rubber Growers and Manufacturers, Ltd." This is a London enterprise, consisting of an amalgamation of two of the longest established and most reputable rubber manufacturers in England, Messrs. George Spencer, Moulton and Co., Ltd., and Messrs. Wood, Milne, Ltd.

The rubber industry is one of which we in the Union know next to nothing. It is generally realised that in one way and another—in respect of hoses and gaskets and other articles for the mines, buffers and brake gear for the railways, tyres and footwear for the general public, tennis balls for the grown ups and bouncing balls for the youngsters, to mention just a few of the manifold uses to which rubber is put—the country spends many scores of thousands of pounds a year. For rubber is indeed as much of an essential to the modern civilised world as steel or petrol, and this essentially primitive vegetable substance, which was probably used in its crude form by pristine man, is now worked up by various complex processes into all manner of useful items. Most of us, too, in the Union know that rubber in its wild form grows in territories whose southern borders march with the northern frontiers of British South Africa, but we have never stopped to think of the possibilities for industry presented in the picture of a local rubber factory working up this coagulous "tree milk" into hundreds of different articles for use by other industries and by the individual members of the public.

Natal Gives a Lead.

It has remained for Natal to give a lead to South Africa in the direction of the rubber industry, and at Howick the casual visitor, the industrial student, the man who has South Africa's cause at heart and wishes to see the country "get a move on," may observe the nucleus of an industry which already has rendered an inestimable service to the country and which will in the near future achieve a great deal more.

Already it is turning out a tremendous diversity of articles. In older countries rubber manufacturers generally specialise in a few articles only, but the Howick factory is the only equipped rubber works in the sub-continent, and is accordingly called upon to produce all manner of articles from a tiny bottle cork to a big piston ring, and of all weights of products from less than one ounce up to articles weighing 30 or 40 lb. apiece.

A Factor of Increasing Industrial Importance.

The Howick factory, although constructional work in connection with it started as recently as February, 1921, and although production was commenced only two years ago, already has become an industrial factor of material importance to South Africa. It may be recalled that when the factory was opened, the Chairman, Mr. Alexander Spencer, indicated to the visitors present, in his speech, that the basic principles at which this factory would sell its products was covered by the phrase: "that the output of this factory will be sold at a definite price over actual cost, and with no reference to the price of the imported article."

The factory is employing 60 Europeans and over 200 coloured workers. It is paying out in wages over £2,000 per month, and the factory is footing an annual freight bill to the railways of between four and five thousand pounds.

The products of the Induna Mills, with their striking trade mark—a Zulu warrior grasping assegai and shield and standing alongside a big motor car tyre—already are favourably known throughout the length and breadth of South Africa, and it is a tribute to the excellence of the goods turned out by the factory that numerous repeat orders from satisfied customers have gone straight to the mills without reference to the excellent sales organisation which has been built up in Johannesburg, and which distributes the products of the Induna Mills along the Reef and indeed throughout South Africa.

Howick Helps to Suppress the Revolution.

It is not yet too early in the day for a proper and fitting appreciation of the good work that is being done by the Howick factory to permeate the minds of the general public, but before proceeding with a description of the mills and going on to giving a brief account of the technology of rubber manufacture and its wider industrial aspects it will not be amiss to refer to an incident of quite dramatic interest and of national importance in which the Howick works played a very vital part.

We on the Rand who, in those fateful days of March of last year, awaited in suspense the turn in the tide of revolution and lawlessness and bloodshed, had little idea that this young South African rubber industry at Howick would take a quite important part in the suppression of the Red terror of anarchy, and yet, although it is generally not known, Howick played its role.

We all remember how vitally the Government aeroplanes affected the situation and how on that critical Sunday morning they helped to clear the Brixton ridge, the stronghold of those misguided people who thought they could overthrow the Government and make South Africa "white." But very few were aware at the time—and few know to this day—that the aeroplanes urgently required rubber radiator connections and that these were not available in the Transvaal. The planes were imperatively required, and the radiator connections simply had to be obtained. But where? Then someone thought of the Howick works. Word was received at Howick at 1 p.m. on the Saturday. The works were closed down for the afternoon. But the enterprising manager got a few workmen together, six sets of connections were turned out, the mail train was stopped at Merrivale and the precious freight got safely through to the storm-swept Rand. By the Tuesday a dozen sets had been delivered, and it is indisputable that this highly efficient work on the part of the Induna Mills was of very great assistance to the Government forces.

How is the crude rubber converted into the finished article? What are the methods employed and how is the final product turned out? These are questions which the layman will naturally ask himself when inspecting the Howick works, and he will find a very full and interesting answer to his queries by going through the plant and observing the various methods whereby the rubber is turned out in commercial form.

Where the Rubber Comes From and How it is Worked Up.

The greater part of the rubber which is worked up into the finished products at Howick is imported from the plantations of the parental organisations in the Malay States. Only very small quantities of African rubber have been purchased for Howick, and this product is generally so crude that it is not considered an attractive commercial proposition. The Malayan rubber comes from the plantations in the Din Dings near Singapore, and it reaches the Induna Mills via Durban packed as translucent sheets of a brownish colour. These sheets are compressed and despatched in wooden cases. This is what is known as plantation rubber, and unlike wild rubbers requires no further washing.

The plantation rubber is most carefully weighed first of all, and it has then to be worked up with a variety of other substances and is treated in various ways and produced from different moulds in order to obtain the finished product required. Degrees of toughness, hardness, softness, colour and other properties are secured by the employment of a large number of chemicals and by the application of scientific principles which are the outcome of years of experience and experiment translated into actual practice by competent technical and business managements operating through the medium of trained workmen who thoroughly understand the art of rubber making in all its well nigh bewildering complexities.

"Fillers and Mixes."

In order to grasp the intricacies of the process it is necessary first of all to visit the store rooms at Howick. The visitor will there observe a remarkable assortment of products, each and all essential for the production of the finished article. Here are tea chests densely packed with the striped sheets from the eastern plantations, stores of sulphur, red lead, whiting barytes and various other elements and compounds. These are comprehensively known as "fillers," and the main function of some of these is to facilitate the chemical combination of rubber and sulphur which is an essential feature of rubber manufacturing. Some of these fillers may be termed inert; but in the case of others they are known as "catalysts," that is to say, they facilitate the combination of the rubber with the sulphur.

The Process Described.

Assuming that the rubber is clean—that is to say, has been washed—the first stage in the manufacture is achieved in the weighing room, where the rubber and mixes are weighed and placed in trays. There are about 2,500 different mixes used at the Howick works, and each of these has an index number. The rubber and mixture (depending, of course, on the type of product which it is sought to manufacture) are then transported in trays from the chemical and weighing rooms to the first stage in the mills proper. Here close mixture is achieved in a mixing mill, which is a heavy, slow-moving machine with two chilled steel rollers which rotate at different speeds and in opposite directions. The speed ratio varies with the type of machine, and whilst the back roll of the mill is fixed, the front roll is capable of horizontal adjustment. The average size of these mixing rolls is about 18 inches in diameter by 48 inches in length. In the mixing process the rolls are first heated to a temperature of about 130 degrees Fahrenheit by means of steam. When the required temperature is obtained the steam is shut off and cold water is turned on in order that the heat generated in grinding the rubber shall not make the rolls too hot.

The rubber is first "masticated"—that is to say, it is ground between the hot rolls until it loses its so-called elasticity. The chemicals are then fed in and are "occluded" or "swallowed up" by the rubber. This "swallowing up" is accelerated by continually cutting the rubber, which is right round the front roll, and folding it back on itself.

A well-mixed "batch" of rubber is homogeneous, and the thoroughness of the mixing is checked by taking specific gravities. When mixed, the batch is cut off the rolls, dusted with French chalk to prevent it sticking to other batches, and put on the dump. Mixing a batch is only the incorporation of the chemicals with the rubber, but it requires considerable experience, otherwise the rubber may be under-masticated, the rolls may get too hot and cause premature vulcanisation, or the batch may be insufficiently mixed and so give a variable product. Before the mixed batch can be moulded it has either to be run in a sheet of some definite thickness, or else, for certain purposes, "forced." If it has to be sheeted, it goes to the "calendar." This is a vertical three-roll machine, in which the top and bottom rolls turn in one direction and the middle roll revolves in the opposite direction. The top and bottom rolls are adjustable vertically. The rolls are, like mixer rolls, of chilled cast iron, steam heated and water cooled by internal circulation. For sheeting rubber all rolls run at even speed. The calendar is first heated to the required temperature. Meanwhile the rubber is heated until it becomes plastic by running round the front roll of a small mixer, called in this case a "warming machine."

When the machine is ready and the rubber is plastic it is put between the two top rolls of the calendar, the rolls having been adjusted to give a sheet of required thickness. The sheet may be run straight off and rolled on a wooden mandrel with a separating cloth to prevent the rubber sticking together, or it may run round the middle roll, be taken off, and passed under the bottom roll and run off in a roll as above. The bottom roll of the calendar has a variable gear. This is made use of in proofing fabric for hose. The bottom roll is run at half the speed of the other rolls and is set so far apart as to let the canvas through without crushing it. The rubber is fed on to the machine as above and is allowed to run right round the middle roll. The canvas, fed between the middle and bottom rolls, is passed under the bottom roll, and is run off in separating cloth like a sheet of rubber. The difference in speeds of the two rolls grinds the rubber into the interstices of the fabric, which is then said to be "frictioned."

Sometimes the rubber is not required in a sheet; it may perhaps be desired to have it in the form of a cord or tube. In that case it is "spewed." A spewing machine is essentially a quick pitch screw turning in a jacketted cylinder. There is a small aperture in the cylinder for feeding in rubber. The front end has a small aperture or die, and the back end is bushed to take the shank of the screw or worm. The machine is heated at the die or "head" and cooled in the body. The rubber is warmed as for calendering and fed evenly into the cylinder. As the screw is fixed, it forces the rubber away to the head, where it is extruded through the die, and is run off in trays. Any section can be "spewed," but the size is limited by the size of the machine. Tubes can be formed by the addition of a "core" which projects through the die and is flush with it in front.

"Calendering" and "spewing," like "mixing," depend almost entirely on the machine being at the right temperature to make the particular mix plastic. If too cold, the rubber "spews" rough; if too hot, premature vulcanisation results. It is obvious, therefore, that considerable experience is necessary in both these operations, otherwise a great deal of rubber is wasted. It is an extremely interesting industrial experience to watch a skilled rubber worker at his job, to observe the adroit manner in which he manipulates the plastic masses, to see the white steel rolls swallowing up the substance, and to hear the continuous crackle as the rubber sheets pass through the machinery and air bubbles are occluded.

The rubber which has been spewed or calendered, as the case may be, now goes to the department for which it was ordered. There it is cut to weight, moulded and cured. There are, generally speaking, two methods of "curing" or vulcanising rubber:—

1. The heat cure, where the mould containing the rubber is put into a pan and the steam admitted for a certain time, or else in an hydraulic press with steam-heated platens.
2. The cold cure, used for joining inner tubes, etc., and consisting essentially of the employment of a solution of sulphur chloride.

Having been cured, the rubber is taken out of the mould. The manufacture is then complete, and before actual marketing there remain only the trimming and packing and despatch.

A Diversity of Products.

Attention must now be given to the more important of the well nigh innumerable products of the Induna Mills. In the first place, hoses of various types may be mentioned, inasmuch as the manufacturing of hoses constitutes one of the principal activities of the mills. The Howick works can produce hoses of practically any type or pattern and up to 60 feet in length. A large and increasing trade is being done with the mines of the Witwatersrand in the production of hose for the gold mines. The company also undertakes the manufacture of garden hose and wine hose for the vineyards in the Cape Province, and in one way and another is now averaging a production of 2½ miles of hose per week, the size varying from ½ inch to 6 inches. In footwear the company is turning out large quantities of Wood Milne rubber soles and heels and other proprietary articles. During the last two years the company has gradually built the footwear output up to a capacity of 70,000 pieces per week, and, naturally, with the addition of a few more presses, it will be quite easy to bring this up to over 100,000. Practically speaking, all Wood Milne footwear, which has been in use in South Africa during the last 18 months, has been made at the factory at Howick. In quality and finish, it compares with the best imported. If anything, it is naturally a little bit better, because it is in a fresher condition.

Children's sports balls are being turned out in large numbers. They are of excellent quality, strong and full of "bounce." Tennis balls specially adapted to the hard courts of South Africa will be on the market shortly, and the manufacture of golf balls is contemplated. Rubber tiling of attractive design is being produced and the company is now carrying out a substantial tiling contract to the order of the Standard Bank at Bloemfontein.

A General View of the Howick Rubber Works.

For the South African Railways the factory has been producing from 4,000 to 5,000 pieces per week, and in all the total quantities of rings, washers, gaskets, rock drill fittings, glands and buffers, and what are generally known as mechanicals have recently been averaging 35,000 to 40,000 per week.

In jointing insertion in rolls, the factory has been producing as much as two tons per week, the bulk of this going to the Rand and the balance to Durban and Capetown. Large orders for collieries and sugar mills are constantly being complied with, and a great deal of the Induna Mill's products in the shape of separator rings is despatched to farmers. Valves for pumps, rubber beakers (invaluable when travelling) and rubber for billiard tables are produced at Howick, and the company's products have been despatched to purchasers as far afield as the Globe and Phoenix Gold Mine in Matabeleland and the Rhodesian Railways. Rickshaw tyres of singularly serviceable quality have been manufactured in substantial quantities and have given complete satisfaction.

The Manufacture of Tyres.

An important branch of activity at the Induna Mills is the manufacture of motor car tyres and tubes. Our representative travelled to Durban from Howick in an Olds-

[illegible] with Induna [illegible] and [illegible] which it is expected to turn out large quantities in the near future.

Closely [illegible] with the [illegible] of [illegible] question of linking up the cotton industry of Eastern Natal, the [illegible] Flats and Zululand with the rubber factory at Howick. At the present time the Induna Mills are importing per week 1,000 yards or 1,250 lbs. of one type of canvas and 100 to 500 lbs. of another type of canvas. In addition, the factory is importing about 700 lbs. per week of yarn for the making of braided hose, and this amount will be doubled in the near future when other machines for this class of work come into operation. Forty per cent. of the hoses turned out are manufactured from braided fabric which can be supplied by Natal, and the management of the factory has in contemplation the erection of a small experimental plant for the making of braiding yarn which can be employed by the rubber works in the manufacture of tyres and hoses. Afterwards looms for the weaving of canvas may be installed. There are undoubtedly great possibilities in this direction.

A Reputation Established.

The South African Rubber Manufacturing Coy. has already gained a reputation throughout the sub-Continent for the consistent excellent of its products, and no effort is spared by the management to insure the use of only the best materials and the employment of first-class workmen who thoroughly know their jobs. The Howick Rubber Works maintain a first-class and up-to-date laboratory and, in addition, there is at the back of the local mills the experimental and research departments of the parental organisation in England at Leyland with long years of experience in the output of rubber goods of all types and descriptions.

The policy of the company is to obtain as much and as many of the various commodities required for the manufacture of commercial rubber from South Africa, but it must be remembered that the industry is still a young one, albeit healthy and expanding. At this stage in the history of the Howick Company any appreciable falling away in the high standard of the company's products would be fatal to this budding industry, and therefore the management is wholly justified in the attitude which it takes up, that is to say, it is determined to take no chance with the materials which it requires.

The general works manager at Howick is Mr. E. B. Pearce, a gentleman who has had a long experience of industrial engineering, chemistry and factory practice in various parts of the world. Courteous and efficient, our representative has much to thank Mr. Pearce for in the production of this article, for he spared no effort to show us everything that there was to be seen and he took the greatest pains to explain in detail the various processes of manufacture adopted in the works. Associated with Mr. Pearce is Mr. R. K. [illegible], the assistant works manager, who is in charge of research and chemical analyses, and Mr. [illegible], who has been associated with the works at Bradford-on-Avon for over 20 years, is in charge as assistant works manager of production.

A Local Industry.

On this question of the use of South African commodities by the company Mr. Pearce was interesting and emphatic.

"We cannot afford to take any chances with the materials which we use," said Mr. Pearce. "Our clients are very exacting in the quality of rubber which we supply. They are not nearly so critical in regard to imported rubber, but they demand a product from this South African factory which must be flawless and thoroughly suited to local requirements. In the past, therefore, we have had to rely almost entirely on imported products of tried quality and proven reliability.

"But at the same time it is our policy to make this a truly South African industry in so far as it is possible. We are always on the look out for South African commodities for the manufacture of Induna brand products, provided that the prices and qualities of these commodities are right. I may tell you that we are at present purchasing sulphur from the Cape Explosives Works at Somerset West, and we are also experimenting with zinc oxide obtained from metallurgical works on the Rand. We hope to very materially develop this local aspect of our works in the future."

"With regard to the rubber workers, does this afford employment for South Africans?" we asked Mr. Pearce.

"Well, for the same reasons that we have had so far to import most of our raw material, we have had to employ experienced workers from overseas, but we have some South Africans working in the mills and we hope to employ more of them in the future, but they will have to learn their trade thoroughly and prove their proficiency."

Some Striking Figures.

What the rubber factory means to Howick and district may be gauged from a few facts and figures which reflect the increasing importance of this young South African industry. Firstly, then, with regard to the wages bill of the Induna Mills, the total number of Europeans employed (including rubber, mechanical and office staff) is 59, and the number of coloured employees 232. The average monthly salaries and wages earned by European staff as above is £1,284, and the average wages per month earned by coloured employees £810.

The following comparative figures as to progress during the past 18 months are of interest:—Number of electrical units and amount of coal used per month: November, 1921, 17,504 units, 72 tons of coal; April, 1923, 42,548 units, 184 tons of coal. Raw rubber used: November, 1921, 2,533 lbs.; April, 1923, 45,000 lbs. Cloth used: April, 1923, 3,844 yards. Output: January, 1922, 36,291 pieces; April, 1923, 166,929 pieces. The average freight bill paid to South African Railways on goods to and from factory only, not including Johannesburg distribution, per month is approximately £375.

The Power Plant.

The power plant of the Company is situated on the Umgeni River and in close proximity to the falls, but as the generators are situated around a bend of the river no part of the power station is observable from the falls, and their natural beauty is in no way affected by the establishment of the Rubber Industry at Howick..

It is a hydro-electric plant, generating power by means of Pelton water wheels. There are two units, each of 150 h.p., whilst room has been left for the installation of a third unit of similar capacity. A dead head of 317 feet of water is obtained at the station, which, with its pipe line, is well illustrated in the series of photographs which constitute our frontispiece this week. The station is in charge of a European with three coloured assistants.

How the Employees are Looked After.

The social welfare aspect of the employees of the Induna Mills has been well looked after, and the old axiom that all work and no play makes Jack a dull boy has been put well forward in the policy of the management.

At Howick there is a 9-hole golf course, tennis courts, and a weekly bioscope brings the rubber workers into touch with topical events all the world over and thrills and amuses them with the exploits of the stars of the silver screen. There are football and cricket clubs and grounds, and in close vicinity to this industrial village bathing, fishing and shooting may be had for the asking. Howick is fairly far removed from that centre of industrial unrest and "demands" in the Union, Johannesburg, and in "Rubber Town" the factory employees appear to lead a contented existence, unenlivened by strikes and revolutions and undisturbed by the deliberations of conferences, conciliations and reference boards and all the other captious contrivances of a democratic age, which are so often comprehensively referred to as "industrial machinery." At Howick, industrial machinery is not concerned with the settlement of labour disputes, but with the manufacture of rubber into useful articles, and in the short period of its existence the factory has succeeded in this almost beyond expectations.

Head Office Management and Sales Organisation.

The head offices and sales department of the South African Rubber Manufacturing Company are at Winchester House, Main Street, Johannesburg. The managing director of the Company is Mr. Henry S. Potter, M.I.Mech.E., and the Company has a thoroughly efficient head office and sales organisation with connections throughout the sub-continent. Mr. Potter is so well known, particularly along the Reef, that it is hardly necessary to refer to his business and technical abilities nor to his inexhaustible fund of energy. But it may be said that few men have their fingers more closely on the pulse of commercial activity in this country than he has, and certainly no man who falls within the scope of our business acquaintanceship is more of a real live wire than he is.

The other directors are very well-known men in the South African commercial world—namely, Professor Dobson, locum chairman, who was for many years in charge of the Johannesburg Power Station, and is now associated with Messrs. Metropolitan-Vickers; Mr. R. M. Dobson, and Mr. W. R. Eales.

The Outlook.

Such, in brief, is the story of Howick and its rubber factory, the processes whereby the Induna Mills turn out a bewildering multiplicity of articles, and the aims and aspirations of the Company.

It is a fine industrial record, and no visitor to the works can fail to be impressed and indeed suprised, as General Smuts said he was surprised when he inspected the Induna Mills at the end of 1921. And the Company will go much further yet. Not only is an expanding local market for Induna products assured, but it is an entirely warranted presumption that in the not far distant future the Company will be able to develop an export trade with, perhaps, South America, India and other countries.

The Union could well do with a few more industries of the type of the Howick Rubber Works. No protective tariffs are asked for, save in respect of motor car tyres, for which some small measure of preferential tariff is desired. For the rest the factory is content to let its products of fresh rubber, as opposed to imported articles, which may be very far from fresh, stand on their own merits. *Floreat Induna!*

Mining Men and Matters.

The Right Hon. E. S. Montagu (formerly Secretary of State for India) has accepted the position of Vice-Chairman of De Beers.

* * *

We understand that Mr. Paull has been appointed Manager of the Amalgamated Langlaagtes and that Mr. Payne will manage the Van Ryn Deep.

* * *

Mr. George Beatty, General Manager of the Randfontein Central, has been appointed to the head office of the "J.C.I." group to assist Professor Lawn, the Consulting Engineer and Joint Managing Director of the group. Mr. Beatty is being succeeded at Randfontein by Mr. Mitchell, who has been managing the State Mines.

* * *

The certificates issued by the Mines Department for the period ended 19th June, 1923, were as follows:—Mine Managers (Metalliferous Mines): B. Beringer, N. L. Calder, R. J. Nairn, F. C. Steinhobel, L. G. Thompson; (Collieries): W. M. Boles; (Non-fiery Collieries): L. A. Robertson. Mine Overseers (Metalliferous Mines): H. P. W. Becker, A. J. Cundill, H. V. Curtis, J. C. Heinemann, E. G. Jones, D. Macleod, R. McKechnie, A. E. Rees, C. W. Sharp, R. W. Townsend, R. van Niekerk; (Diamond Mines): E. I. C. I. Peddle; (Collieries): J. Graham. Mechanical Engineers (works only): N. O. Curry. Electrical Engineers (works only): N. O. Curry. Surveyors: L. G. C. Wright.

Swaziland Mineral Development Commission.

An official notice appearing in this issue states that the Swaziland Mineral Development Commission will commence its sittings at Mbabane, Swaziland, on July 9th. As soon as possible thereafter the Commission will continue its sittings in Johannesburg.

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Natal's Cotton Industry.

TREMENDOUS DEVELOPMENT FORESHADOWED—THE UNION'S BIG CHANCE—ROUILLARD OF THE LOW VELD AND WHAT HE HAS DONE FOR THE COUNTRY—BUSINESS VERSUS POLITICS—MOGUT THE KEY POSITION OF THE COTTON LANDS—WHYTHE GOVERNMENT SHOULD HELP.

(By Our Special Commissioner.)

The second article of this series, illustrated with further photos specially taken for the Commercial and Industrial Section of the "S.A. Mining and Engineering Journal," will appear next week.

South African industry is at present under a cloud. The whole country is suffering from the results of war and post armistice conditions, unjustifiable extravagances, short-sighted statesmanship—or total lack of statesmanship—a surfeit of politics, racial and class rancour, faulty finance, exorbitant taxation, labour unrest, and the general debility of a war-shocked world. This sounds a very elaborate and alarming diagnosis, but it is nevertheless true. In only one Province of the Union of South Africa is any real progress being made to-day, and that is in Natal, where people are not rent by schisms or crushed by taxation as they are in the Transvaal, where the grown-ups have other things to do than merely discuss politics all day long and where the children don't spell branches "brantjes."

A Fine Field of Cotton on Bedrog, one of the Candover Estates Properties.

Clearing Cotton Lands for Cultivation. "Stumping" on Candover Estates.

The Union's Biggest New Development.

Natal is going ahead and the biggest new development in that Province—or, in fact, in the whole of the Union—is taking place there in the establishment of boundless acreages under cotton. Just as the United States of America recovered from the devastating effects of the great civil war of the sixties through the medium of cotton cultivation so can South Africa arise from the slough of despond in which she is floundering through cotton production. If each and every politician in and outside of the legislative Assembly and the Provincial Council Chambers would grow 50 acres of cotton per annum, instead of wasting the country's time and money and patience in arguing over the relative merits and demerits of having Hansard printed in high or low Dutch, and instead of paralysing the country's business by endeavouring to crush the gold mining industry of the Witwatersrand out of existence, then these men would justify their salaries far more so than they do to-day. At the present time the mining industry of the Witwatersrand is carrying the bulk of the country on its back. But it cannot for ever continue to do so and new industries are urgently needed to take the place of the declinging gold mines.

Everything in its Favour.

And what is there in South Africa which presents such attractive and illimitable prospects of success and prosperity and of the solution of the unemployment problem and the depleted Treasury as cotton? Certainly nothing else in South Africa. The facts are that in the United States of America, which hitherto has produced the great bulk of the world's cotton crop, millions of acres are devastated by the boll weevil. Even if all the cotton lands could be successfully reconditioned to-morrow it would still take years before the American output could be regained. And in the meantime the world is faced with a cotton famine. The looms and spindles of Manchester are crying out for cotton and there is a great movement afoot which demands the growth of cotton for the British mills within the Empire.

Immense Areas Awaiting Development.

In Eastern Natal, in the "low veld" (as it is called) portion of the Garden Colony, there are hundreds and thousands of square miles eminently suitable for the growth of cotton. A few thousand acres are already producing cotton. Preparations are in advance for the establishment of much larger areas under cotton next year, and if the Government adopted a progressive and helpful policy in regard to this as yet young but immensely promising industry, there is no saying what the Union may not achieve in the production and perhaps the manufacture of cotton during the next few years. In the area at present under development between the Pongola and Umkuze Rivers and in their valleys and below the great escarpment of the Ubombo Range, cotton can be grown at 66 per cent. of the American cost and it is fetching 20 per cent. more on European markets than the American product is obtaining.

The Pongola River at Pongola Poort.

Wanted, a Railway.

The possibilities of cotton growing in this area are phenomenal. Quite apart from the privately-owned farms which are now practically all taken up with a view to cotton growing, the Government owns two million acres of Crown lands in this area. Most of this is arable and capable of growing cotton of excellent quality and which is assured of commanding a good price in the world's markets for several years to come. By residing on selected hill sites the white man can live in this country without any detriment to the health of either himself or his wife and family. Here then is a wonderful opportunity for South Africa. But what is essentially needed for the development of the areas in question is the construction of a railway.

On all sides the entrancing prospects of cotton growing and dairying in this beautiful fertile and well-watered tract are admitted. The Prime Minister and the Minister of Lands have visited these areas and have been immensely impressed. It is understood that they expressed themselves as being "sympathetically inclined." And there apparently the matter is allowed to rest. A railway from Somkele northwards through Chaneni and passing below the base of the Ubombo Range, with a branch line up the western side of the Rooi Rand, would open up the fairest and most fertile part of South Africa. But although an offer to provide £100,000 of private money for the construction of such a line has been refused, the Government seem to be content to let private enterprise struggle along with the construction of roads from Vryheid and Louwsberg or from Somkele in an effort to exploit the cotton areas and to market their produce.

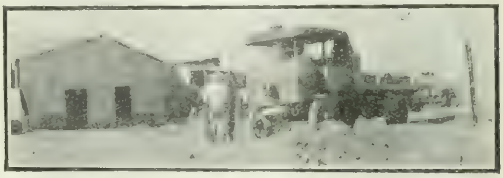
The Ginnery, Candover Estates.

If a forward policy were adopted in regard to the exploitation of this cotton country, there might easily in a few years time be 1,000 or even 10,000 white people prospering there and producing an output of cotton which might very easily and eventually have a value of twenty or even twenty-five millions of pounds sterling per annum.

The Government Asleep.

The same apathy which is exhibited in regard to railways is observable in respect of roads, telephones, police and a doctor. The people who are opening up Eastern Natal with their own money are not there to make roads or to build private telephone lines. Neither is it part of their legitimate province to provide quarters for police or to pay the expenses of Government [illegible]. Their function as business agriculturists is to grow cotton at a profit, and it is most distinctly the Government's job to provide transport and to see to it that an increasing community operating an expanding industry which can offer employment to many hundreds of South African sons of the soil should have the ordinary amenities of civilised life such as a magistrate, police, a doctor and hospital, and a school and telephonic or telegraphic communications quite apart from railway facilities to the same degree that "Pumpkindorp" in the Free State enjoys them.

Cotton Arriving at Boomlaager Station.



A Yorkshire Steam Wagon employed on Transporting Candover Cotton.

These things are constantly promised or else are said to be receiving departmental attention. They are always coming along "to-morrow." Political motives seem to be the dominant consideration in the Union to-day, and the country's motto might well be changed from "Ex Unitate Vires" to "Manyana," which is the Spanish equivalent for the day that never comes.

An Outstanding Personality.

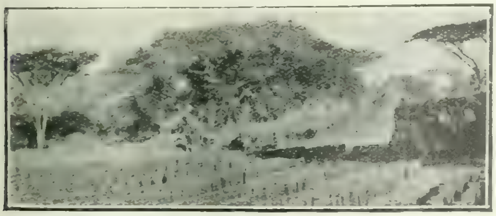
To leave aside, however, this doleful aspect of governmental neglect, it will provide much more cheerful reading to relate what has already been done, what is being done at present, and what is in prospect for the Eastern Natal cotton industry despite the great difficulties which have had to be met.

The dominant personality in all this Natal low veld development, the man who has laid the foundations of the cotton industry in the most prolific cotton-growing district of the Union, and who by his foresight and pluck and perseverance has metamorphosed this portion of Natal, is Richard Rouillard, of Vryheid and Durban. Few men in the Union have the ability to look intelligently ahead or possess the capacity for getting things done in a quiet and unobtrusive and yet masterful way in the same degree as these qualities are possessed and employed by Rouillard. It is not in fact an exaggeration to say that Rouillard more than any other man in South Africa possesses those qualities of comprehensive vision combined with decisive action and ability to best use and employ men for the furtherance of his far-reaching schemes which characterised Rhodes. No one can appreciate what Rouillard has done and is doing for what has hitherto been the Cinderella of the sub-continent unless he has travelled with him over the enormous areas which his fertile and resourceful brain have exploited.

Candover Estates and Mogut.

The pioneer and premier enterprise of this area is the Candover Estates, which has been operating the last ten years and owes it's present satisfactory position to the energy and perseverance of Rouillard, who, backed by Mauritian capital, has built roads, and despite great difficulties established Candover with headquarters at Mogut. Mogut is the key position to all this fertile so-called "low veld" country. It was from here that Rouillard commenced his cattle and agricultural operations in the despised low veld country more than a decade ago, and it is on this lofty eminence that the brains and driving power and central organisation with years of local experience behind it is centred. A wonderful hill this. A road climbs up its flanks and there is a spring in the hill which provides a plentiful supply of crystal clear water. There is always a breeze blowing over Mogut, so that mosquitoes never buzz annoyance to the residents of the hill, and there are numerous houses and offices and other buildings with flower and fruit and vegetable gardens, a tennis court and a 3 hole golf course, telephone connection with Vryheid, all of these proclaim the success of the work that has been so perseveringly carried out by the Candover Co. in its conquest of the fertile plains and valleys lying below this mountain, which is almost Gibraltar-like in its commanding impressiveness and from the edge of which we may cast one's eyes north, south, east and west and survey a view in its comprehensive grandeur which rivals the prospect from the more famous hill in the Matopos. In fact in my opinion it outrivals "the World's View" where Rhodes sleeps, and a man who can stand on the brink of this escarpment and who can survey the broad sweep of the plains and note the rolling ranges stretching away in the sunlight, or else at dusk see them tinted with the heliotrope and amber and purple of eventide and who can remain unmoved by the sheer artistry of the vision and unenchanted by the tremendous prospect of agricultural development which this delightful country presents must indeed be shorn of soul and dead in imagination. Look to the north, and you may descry the silver thread of the Pongola stealing through the valleys. Away to the south beyond the Umkusi is the knoll whereon Nongoma stands, with the royal kraal of the Zulu kings hard by it. To the west rise ridge upon ridge until in the far distance lies Louwsberg and in the unsighted miles the coal mountains of Hlobane. And eastwards beyond the lower lying hills you may observe the range of the Rooi Rand, and beyond that in the blue haze a long wall of grey which merges with the sky and is known as the Ubombo or Lebombo Range. Here on the frontiers of the low and middle veld a man may sit and in his mind manufacture the stuff of which dreams are made, and so envision the whole of this vast and virtually unknown territory under the plough of the agriculturist with homes upon the breeze-swept hill tops, and with crops growing in the warmer valleys and on the plains.

Cotton Stored at Wilhelmshome, Candover Estates.



Brick Making at Pongola Poort.

But dreams sometimes come true and here in verity is one grand and entrancing vision that already has begun to assume the shape and definitions of reality.

Two years ago, when I visited Candover and obtained a first glimpse of the immense possibilities of this tract of country, the value of cotton development had just begun to be realised; a few hundred acres had been cleared for planting and a limited area had already been planted with cotton which seemed to be doing remarkably well.

This Year's Output: Preparations for Next Year.

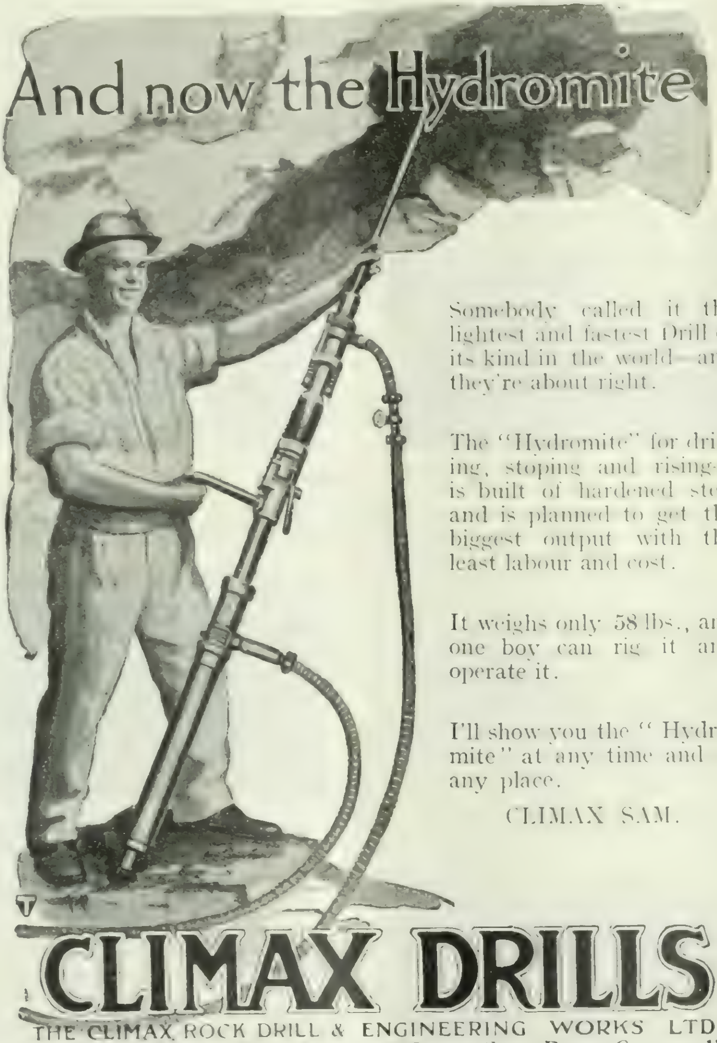
The position there to-day has to be seen to be believed. Taking the whole area between the Pongola and Umkusi Rivers, it may be said that preparations are now advanced for the cultivation of a further 9,000 acres of cotton. This year's production is calculated at 2,750,000 lbs. of seed cotton, or 916,600 lbs. of lint, of a total value of £66,000, whilst the cotton seed is calculated to be worth an additional £11,000. Next year's production will probably have a value of £350,000, and cotton prices are likely to continue satisfactory on account of the huge restrictions American output production through the ravages of the boll weevil and a shortage of "carry over" supplies. The Candover Estates alone has now 2,500 acres under cultivation, and is preparing to plant a further 3,300 acres. This year's output from Candover will be 3,500 to 4,000 bales, each of 500 lbs. lint, or £40,000 value and next year £100,000 revenue is expected.

Picking Cotton on a Candover Estate Property.

And in addition to the Candover Estates, other concerns are now clearing extensive acreages and are preparing to share in the rich cotton harvest which, as surely as to-morrow's sunrise, will be the heritage of the Natal low veld during the next few years.

With these other enterprises and with other aspects of the cotton industry in this remarkably fertile area of the Union our special commissioner will deal in next week's issue of the *South African Mining and Engineering Journal.*

(To be Continued.)



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FREE STATE FARMERS' VENTURE—£100,000 FACTORY AT HARRISMITH—ANNUAL OUTPUT OF 250,000 BLANKETS—BRITISH MACHINE MAKERS UNDERBID BY GERMANS—A DIFFERENCE OF £120,000.

A first-class factory, equipped with the very latest textile machines, has been opened at Harrismith this week under the happiest auspices. If there is one industry that should "make good" in South Africa it is the manufacture of woollen goods. There is an abundance of the "raw material" and the market for the finished product immediately at hand. What that market represents may be judged from the fact that during the last four years the value of blankets imported into this country has been: 1922, £268,270; 1921, £413,125; 1920, £663,830; 1919, £400,960.

These imports are subject to a Customs duty of 25 per cent. to say nothing of the further protection the local makers enjoy in respect to shipping and rail charges, and a succession of agents' and middlemen's profits in the course of sending the wool from this country, its manufacture in England (which has hitherto sent an average of over 90 per cent. of this country's imported blankets), and the sale of these goods to the South African user. The natives are, of course, the largest buyers; it is estimated that between two and two and a half million blankets are annually sent into Basutoland alone, and the Transkei accounts for another half million per annum.

With such inducements it is not surprising to find that South African farmers have readily subscribed the capital required for the establishment of the factory, which has been erected by Messrs. Fraser and Chalmers (S.A.), Ltd., of Johannesburg, for the National Wool Industries of South Africa, Ltd. This concern has a nominal capital of £300,000; the capital called up is £234,368; and actually paid up £163,628, of which well over 90 per cent. is said to have been subscribed by the farmers.

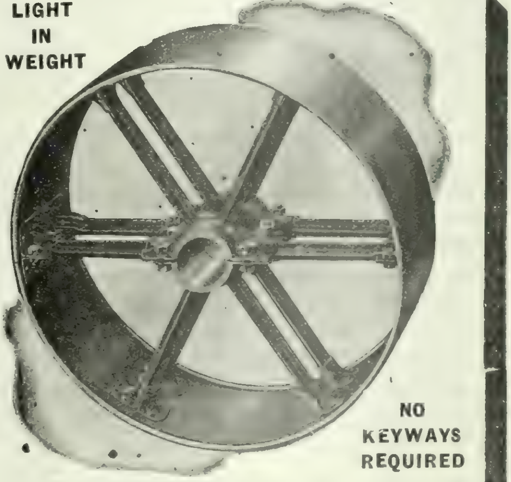
An Initial Disappointment.

A representative of *The South African Mining and Engineering Journal* has visited the factory at Harrismith this week, A spacious, airy and well-lighted building, occupying something like four acres adjacent to the railway line, is equipped with an installation of wool-manufacturing machinery of the very latest pattern, some of which is for the first time in actual factory operation. The visitor experiences an initial disappointment in finding that this plant, from the 500 horse-power tandem compound condensing engine, driving the dynamo which generates the electric power on which the factory is run and lighted, down to the smallest detail of the spinning mules and weaving looms, is of German make. Moreover, the factory is under German management and technical direction—some thirteen experts having been brought over with the plant. But this circumstance is explained by the fact that the lowest British tender was £150,000, while the German makers' figure was £33,300. Added to this was £19,209 for additions, handling, transhipment and railage. The complete plant has been erected at Harrismith for £52,000. The land, factory, power station, woolshed, stores, etc., cost £46,173. In the placing of contracts account had also to be taken of the fact that, while the German firm could promise delivery in ten months, the Americans wanted four years and the British stipulated two years

Expert Advice from Five Countries.

When it is stated that the textile experts of five countries—England, America, France, Holland and Germany—were consulted before the lay-out and the plant was decided upon, it will be seen that there is some justification for the organising director's claim that this factory represents the last word in wool manufacture. The enterprise owes its inception to Mr. J. W. van Aardt, an attorney, who relinquished his professional practice in the Cape Province to devote himself to the industrial exploitation of some of his country's natural resources. He has spent three years on this particular scheme, and incidentally visited and inspected over 170 factories in Europe and America.

He enlisted the sympathetic co-operation of the Union Government, both here and in the person of Mr. Canham, the Union's Trade Commissioner in England, through whose instrumentality he was afforded facilities for seeing the wool factories of Yorkshire and brought into consultation with some of the leading British textile machinery experts. It will be seen, therefore that the enterprise started off with no anti British bias. He found, with some regret, that the British makers of the required plant were hopelessly out of it. But being a business proposition, and dealing with money that had been readily subscribed by South African farmers, he felt he could not allow national sympathies or prejudices to stand in the way when a saving of something like £120,000 in capital outlay was involved.



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Complete Equipment.

The factory was commenced about fifteen months ago, at the same time that the orders for the machinery were placed. A necessary adjunct in a district so far removed from engineering facilities, is a repair shop with a very complete equipment—a lathe alone is valued at £3,000. There is also a welding plant, together with the necessary acetylene generator. Among the principal features of the factory equipment is the washing plant, 150 ft. in length, which the management claim to be the most up-to-date in South Africa. At the end of this fine piece of machinery is a drying machine capable, it is said, of drying £800 worth of wool in four minutes. There are also some wonderfully intricate combing machines, each about 40 feet in length. In the spinning shed there are at present 2,500 spindles, and an installation of 50 weaving looms.

Adjoining the factory premises is the Harrismith wool market where twice a week there will be auction sales of wool averaging, it is estimated, from 800 to 1,000 bales. The requirements of the factory are put at a minimum of 1,000,000 lbs. of wool per annum, and the output initially aimed at is a quarter of a million blankets per annum. Already, a few days before the opening of the factory, one order for 50,000 blankets was placed, and Mr. van Aardt, who had based his calculations on reaching a capacity output within twelve months of the opening, finds that this happy consummation will be reached in less than half that time.

Advantages of Harrismith.

Harrismith has been selected as the site of this enterprise for several practical reasons. It is a good geographical centre, both for getting the raw material and for distributing the finished product. Coal is within comparatively easy reach and is at present being delivered to the factory at 12s. 7d. per ton.

But an even more important factor is the availability of an adequate supply of suitable water—the softest in the country, according to the experts. There were some misgivings as to the suitability of the atmospheric conditions, but in reply to these doubts, Mr. van Aardt said science could remedy any deficiencies in this respect; and it is asserted that the system of steam and hot water pipes will provide an atmosphere of any desired humidity. He is also confident that, under the instruction of a few expert operatives he has brought into the factory, local labour will very soon acquire the necessary skill. Ultimately, it is hoped to find employment for about 700, of whom not more than about 150 will be natives. At present 200 are being employed. The factory has in stock sufficient wool to last till the next clip, and German dyes adequate for a couple of years.

Dangers Averted.

The promoters of this enterprise have sought to avoid two errors which have been common to certain other industrial undertakings in South Africa. Sufficient capital has been secured to ensure an unembarassed start; according to the chairman of the company, in a statement he made at the opening ceremony on Wednesday, there is still in reserve 65,632 shares; and in available capital, including called-up capital, cash on hand, deposits, bonds, bills and interest due, wool on hand and sundry debtors, there is still due to the company the sum of £94,343.

Another danger which has been guarded against is the temptation to tackle too wide a field. At present the factory is to concentrate on blankets, and of these to specialise on the natives' requirements. These are of almost endless variety and vivid colouring, each tribe preferring its own distinctive pattern. In this connection a thirty years' experience gives special value to the services of Mr. S. J. Thake, who has charge of the sales and distribution department.

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IRRIGATION EXPENDITURE.

A select committee appointed by the Government has recently discharged free of liability the sum of £94,750 off the principal and £76,639 off interest in respect of five irrigation schemes authorised at the original cost of £249,500. These schemes are all concerned with arid parts in the Cape Province, and include Maraisburg, Smallfontein, Calitzdorp, Buffelsfontein and Kaffirkuils. These schemes have all been carried out under irrigation boards on the advice and with the assistance of the Government Department of Irrigation. In each instance the schemes have cost very much more than the amounts earmarked for their completion. Thus the first estimated cost of the Calitzdorp scheme was £100,000, but the revised estimate is £168,000. After protracted negotiations the committee in the end wrote off £40,000 from the principal and £50,200 in the interest.

It is worth while bearing these figures in mind, in view of the fact that it is often urged by Nationalist and Labourite politicians that gold mining should be carried out by the Government and the mines should be nationalised. The construction of irrigation works does not call for anything like the experience and financial and technical ability which such a highly complicated business as the operation of the deep level mines of the Witwatersrand calls for. If the original estimates of construction are so enormously exceeded in actual practice in the case of such comparatively simple undertakings as irrigation works, one is tempted to wonder by just how much the original estimate of £1,850,000 for the development and equipment of the Geduld East Area, would be exceeded by the Government if the exploitation of that proposition were to be undertaken by departments of the State; and assuming, of course, that the Government were able to raise the large sum of money mentioned above to start the experiment with.

The Iron and Steel Industry.

The Pretoria Municipal Council has renewed the lease of the town lands iron ore deposits to the S.A. Iron and Steel Corporation, Ltd. The Pretoria Town Council has issued a statement dealing with the negotiations for an extension of lease by the S.A. Iron and Steel Corporation, Ltd., and radical modifications of the terms of the existing lease. The secretary of the Corporation on June 4 sent a letter to the Town Council submitting a statement of the position, and requesting the Council for an extension of five years, and 27 months, in which to carry out terms of the lease ceded to the company by the Pretoria Iron Mines, Ltd. The company, he explained, felt it was economically out of the question to build up the industry "by degrees" and compete with the imported article. It felt the industry must be established on the basis of a minimum output of 90,000 to 100,000 tons of steel per annum, or 2,000 per week. That would require a capital of two or two and a half millions. The secretary explained how the company had failed to raise the capital, and how, on the suggestion of overseas financiers, an agreement for amalgamation had been entered into with the Union Steel Corporation. It was now proposed that the Newcastle Iron and Steel Company should also amalgamate, and the programme involved by the general combine would be two and a half millions. There seems now to be nothing in the way of the big fusion of all the interests, as recently described in these columns.

Trade and Industry in Natal.

REVIEW OF PROSPECTS AND CONDITIONS—MINING, BUILDING AND LOCAL INDUSTRIAL ACTIVITY.

(From our own Correspondent.)

Durban, June 26th.

The most notable feature of business and industry here during the past month, so far as its vital effect upon a flourishing trade is concerned, is undoubtedly the trouble that has arisen in the building industry. This has come upon us at a time when the trade was going ahead by leaps and bounds—indeed, it has been freely claimed that in no other town in the Union have building masters and operatives been so fully employed for the last few months. Official figures showed that the estimated cost of buildings approved by the Town Council in the last twelve months was about £900,000, or very nearly double the value of the buildings erected in 1921. More dwelling houses are being built, and gradually—very gradually, it is true—the housing problem is being grappled with, while many flats have been, or will be, erected, particularly on the Berea, Durban's outstanding residential area.

Well, with all this activity and its corresponding actual and potential employment, trouble has arisen between masters and men. The question of wages seems to have cropped up again, as it did just over two months ago, when the men applied for an increase of 2d. on the existing rate of 3s. 1d. per hour, and the employers at the same time wished to reduce wages by the same amount. On that occasion, however, a local agreement was come to that wages should be unaltered for at least three months after April 6th. That period will soon have expired, and the workers are reported to take the view that the cost of living is no lower, while the cost of material has come down. The Wages Board has been suggested as the proper body to settle this matter (which has not yet come to a head and incidentally arrive at a real economic wage which might give some prospect of stabilisation.

Since then more immediate difficulty has arisen over the question of the alleged introduction of plasterers who are members of another society with headquarters outside Natal. Plasterers have been needed in the town for weeks past, for there are a number of buildings awaiting them. Anyway, a few days ago the Building Workers' Industrial Union called off the plasterers on certain jobs, an action which was promptly resented by the Master Builders' Association, who regard it as a breach of an understanding that any disputed matter should first be submitted to them before drastic action is taken. They met, and decided that unless the men returned to work they would lock out all the union plasterers.

There the matter remains at the time of writing, though it is announced that the B.W.I.U. have asked Mr Frank Gray, of the White Labour Bureau, to intervene on their behalf. It is the hope of business men here that some settlement will speedily be come to, and that an industry which, in spite of the lean times that have not yet gone, was going ahead, may speedily be able to resume that progress.

Pivaan Coal.

The reports on a vast new coal area at Pivaan in the north-east corner of the Province, have tended to strengthen—if such aid were needed confidence in the future of Durban, and its economic development. The Government Inspector has confirmed the statements of the consulting engineer of the Durban syndicate which owns this embryo coal mining area. The chairman of the syndicate, Captain C. V. Hardcastle, is optimistic concerning the importance of the new area. He points out that samples of steam coal taken from seven adits on the hillside show an average of 77·21 per cent. of fixed carbon, as compared with an average of 70·55 per cent. of the six best Natal collieries, and that the percentage of ash is 6·51, as compared with that of 9·75 of the six collieries mentioned. The No. 1 Admiralty standard of fixed carbon percentage is 81·9 and the No. 2 standard 76·97. Altogether, it is claimed, the dry steam coal strongly resembles the best Welsh product. The field is also reported to contain coal suitable for gas and coke production and torban and ordinary oil shales. It is calculated that there are 260,000,000 tons of steam coal alone, without reckoning bituminous deposits occurring over an area of about 10,000 acres.

The syndicate are hoping eventually to compete in the Indian and Eastern markets, as well as Port Said and Alexandria, if not in Italy. It is interesting to note that the area is only about 125 miles from Sordwana Bay, and should the proposed Pongola Valley railway be built the rich cotton belt of Northern Natal would be served.

General Business.

So far as general business is concerned, things on the wholesale side may be said to have improved a little during the month, and there is an optimistic undertone in business circles, though in some cases the amount of business done may not seem to warrant any undue joyousness, though this time of the year seldom sees much activity among wholesalers. A really good wool season would soon be reflected in up-country orders, which are the most important in their effect upon the wholesaler.

So far as sugar is concerned, inquiries show that with the resumption of milling the position should gradually become easier, but some weeks must elapse before anything like normal can be compassed. Recent disclosures from the Rand regarding retail prices have created interest here, where it is contended that whoever is milking the consuming cow it is not being done at this end.

Retail trade has been on the quiet side this month, chiefly because the number of visitors has not been very large so far, and much below that of boom years. However, storekeepers are looking to July to make up in some measure for the disappointments of this month, and are therefore inclined not to be unduly pessimistic. The manager of one of our largest houses told me that the boarding houses and private hotels were a pretty safe barometer, and that these places have not the usual crowd of visitors staying there, with the result that business has been slack. But nearly all these establishments, he said, are fully booked for July, and it was almost certain that, in spite of the fact that money, generally speaking, is not plentiful, the stores and shops would do good business next month, particularly when one considered the added attractions of the big July race meeting and Show Week.

Harbour Developments.

Harbour developments are gradually proceeding. Portions of the concrete work which subsided at the site of the grain elevator have been broken up by dynamite, and the Government are proceeding with the erection of the elevator departmentally.

With regard to the new graving dock engineers have arrived from the works of Sir W. G. Armstrong, Whitworth and Co., Newcastle-on-Tyne, to erect the sliding caissons which form the dock gates. They will be electrically operated, and each will weigh about 850 tons, and when the work is finished go-ahead Durban will have the largest dry dock in the Southern Hemisphere.

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SHIPS AND SHIPPING.

INDIA AND A STATE-OWNED FLEET—SOME LESSONS FROM AMERICA.

(From our Special Correspondent.)

LONDON, June 8.

At the moment when the United States Shipping Board is endeavouring to rid itself of a bad bargain by disposing of 375 of its vessels to the highest bidder, India is seriously contemplating the acquisition of a State-owned and State-managed fleet.

The lesson of America's disastrous trading adventure has, apparently, been lost upon the East. South Africa has reason to watch developments with more than a passing interest.

A Bill has been introduced into the Legislative Assembly providing for the abolition of the system of deferred rebates and the prevention of rate wars. The passing of this measure is to pave the way for the creation of an Indian merchant marine, by means of funds provided by the State, manned and officered by Indians. It is said that the Indian Mercantile Marine Committee desires to establish an Indian nautical school for the training of Indians as seamen as well as to enable them to quality to become deck and engine-room officers.

This ambitious project was outlined in some detail in an address delivered by Mr. S. N. Haii before the members of the Council of State and the Legislative Assembly. He claimed that a country with a coast line of over 4,000 miles was meant by nature to be a sea-faring country, and that the present "foreign steamship companies" give preferential treatment to foreign exporting houses, which works against the Indians engaged in that line. He drew attention to the fiscal loss incurred by shipping working in the Indian trade not being amenable to the laws of India, and contended that as the "offices of the companies operating in the Indian seas are situated in England, the Indian income-tax officers were unable properly to assess the incomes of these organisations." Mr. Haii also claimed that if the whole of the Indian shipping traffic now worked by the British companies were in Indian hands, "a very profitable source of national revenue would be guaranteed to the Government of India, and a certain amount of relief afforded to the already over-taxed poor of this country."

This argument looks well on paper; nor would it be logical to find fault with India's quite laudable ambition to reap for the benefit of her taxpayers any profits that may accrue from the working of a State-owned fleet of vessels. Other nations have thought likewise—America, Japan and France among them—and it might be as well, out of further consideration for the taxpayer, if representatives of these countries were approached for advice and counsel before the very costly and burdensome machinery which India would require, apart from her ships, has been installed. India appears to have no particular grievance against the capitalist concerns which at present provide her shipping services. The only objections to them, according to Mr. Haii, appear to be their "foreign" origin and the fact that they are insufficiently taxed. He seems to forget that these same "foreign" concerns have helped to make India, that they have created India's export trade and have taken speculative risks in the ordinary way of business that no Government would countenance or could ever hope for sanction to entertain.

As things are, shipping is far too intricate a business for profitable State operations. The United States found it so. Its losses have been enormous. Despite preferential traffic rules and subsidies, non-nationals have more than shared the coast-wise trade. How can India hope to succeed where America has admittedly failed?

Vessels Going A-begging.

No one appears to want the surplus ships of the United States Board. Recent efforts made to sell them were not successful. All vessels and routes owned by the Government were offered for sale some weeks ago, and on Monday the bids were opened. Of twenty tenders received, only four were deemed worthy of further consideration, much to the disappointment of the Shipping Board, and even these four cannot be accepted until certain ambiguities have been explained.

It has first to be ascertained definitely how many ships can be disposed of before the Board will be in a position to formulate a policy for the future running of the vessels of which it retains control. Congress is known to be opposed to Government ownership, and yet, owing to private reluctance to assume control of the vessels now under offer, the Government may be obliged to continue its money-losing venture. Either that or the ships must be laid up.

Steam's Great Rival.

The internal combustion engine is more and more becoming the rival of steam. Early faith in the engines of the diesel type has been more than justified. The experimental stages were passed long ago; motor ships of large tonnage are no longer objects of wonderment and speculation. For a long time the French harboured a prejudice against the motor-propelled vessel, but the building in a French yard of an 11,000 tonner, and the projected construction of a 10,500 ton passenger ship for the Marseilles-Eastern Mediterranean service are signs of capitulation and conversion. Several tankers up to 12,000 tons capacity are on the eve of being ordered in this country.

Anthrax at Sea.

The possibility of developing anthrax at sea is not so remote as it might appear. As an instance, an extraordinary story comes from Hull. When the local trawler, Mas Pemberton, recently arrived in port from an Iceland trip she was found to be infected with the disease. The boatswain died of it at Dyarfiord, and another member of the crew on a previous voyage had been treated for anthrax at the Hull Royal Infirmary. The probable cause of the outbreak is believed to be the hides used on the vessel to protect the trawl net from chafing. They were traced from a commercial house at Hull to Singapore, via Liverpool. All the hides on board the vessel were surrendered by the owner and destroyed, the personal effects of the crew were disinfected, and the men's quarters fumigated. Besides these precautions, the vessel was entirely repainted before she was allowed to return to the fishing grounds.

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TOPICS OF THE WEEK.

The Central Mining Meeting.

A full report of the notable speech made by Sir Lionel Phillips at the annual meeting of the Central Mining Corporation in London appears in this issue. The affairs of this great Corporation are so closely bound up with the fortunes of the Rand that every word of the Chairman's speech has an immediate and very direct interest for people on this side. At the outset, for reasons which are now familiar, Sir Lionel was able to announce that the accounts "show quite a decided change for the better in the position of the Corporation." The financial policy, as revealed and explained by the Chairman, seems to have followed the same lines as those pursued by the Rand Mines, Ltd., on, of course, a larger scale, as befitted the larger responsibilities of the major organisation. In a word, the financial position of the Corporation has been strengthened by a measure of profit-taking, in order, inter alia, to be in a position to undertake new business. The consulting engineer, Mr. A. J. Brett, had submitted a valuable analyses and review of the operating costs for the year, and these Sir Lionel explained and emphasised. Turning to the public finance of the Union, Sir Lionel uttered a plea for economy. "Steps," he said, "should be speedily taken to balance the annual budget and again to provide not only interest, but a permanent sinking fund for debt redemption."

He ended on an encouraging note in saying that "the worst of this depression in trade and commerce is past" and the general revenue may be expected to benefit. Sir Lionel's thoughtful remarks on the question of living costs and the attitude of Labour will, we trust, be read by all concerned, as they are obviously the fruit of much careful study. They are equally applicable to conditions on the Rand as in England, and they bear the impress of sincere conviction.

Legislation and the Mines.

Mr. H. O. Buckle's speech at the quarterly meeting of the Chamber of Mines this week dealt very frankly with the legislative measures with which the mining industry is threatened. Though the three Bills which Mr. Buckle specifically referred to have been held over till the next session of the Union Parliament, there is no guarantee that they will not be brought forward in their present form, and the President of the Chamber was therefore doing no more than his duty in protesting against them. "That legislation should be influenced by an active hostility to the mining industry is unfortunately no new thing," he said, "but I suggest to you, gentlemen, that, in view of the nature of the legislation previously brought in on this subject, and its culmination in the Bills brought forward in this session, it is a matter for very serious consideration whether under any possible Government the industry is likely to be dealt with more fairly than at present." This was Mr. Buckle's conclusion after a closely reasoned criticism of the Mines and Works Bill, the Conciliation Bill as altered in Select Committee, and the Gold Law Amendment Bill. "One would suppose," said Mr. Buckle in another telling passage in his speech, "that the reasonable course of the authorities would be to offer special attractions to investors. Looking, however, at recent legislation, it is perfectly obvious that the opposite course is being pursued." Having demonstrated the confiscatory nature of the Gold Law Amendment Bill, Mr. Buckle very pertinently declared: "But this is not a matter which concerns the mines alone. Once the principle of confiscation is admitted into legislation it never stops where it starts. Once this principle is admitted, nobody's property will be safe, and whenever political reasons make it expedient for the Minister of the moment to confiscate and distribute the property of farmers amongst the much more numerous body of landless voters, you may be very sure that the present clause, if it ever passes into law, will be cited as a precedent for that course of action."

Turning to the Conciliation Bill, Mr. Buckle said that as it had emerged from the Select Committee it was almost unrecognisable. It would be unlawful for any employer to make it a condition of employment that an employee should not be a member of a trade union or any particular trade union—a provision which was diametrically opposed to the voluntary agreement of the industry with its employees, under which officials could not be members of trade unions, a provision which was most emphatically approved by the late Hon. William Brace. "You will observe that all these alterations are to the prejudice of employers," the President remarked, after dealing with several. "If you will look at the text of the amended Bill itself you will see various others, too small to take up your time over, but noteworthy in themselves as showing how the whole of the changes are animated by a spirit of hostility towards employers."

The President's speech also included some plain speaking in regard to the Provincial Council's Companies Tax. "The Provincial Council," he said, "within its sphere, is ably seconding the efforts of the Minister for Mines to destroy the credit, first of the mining industry and then of the country, and thereby to increase unemployment. The new Companies Tax Ordinance [illegible] all companies, including insurance companies, and in the case of financial corporations registered in the Transvaal, impose taxation at double the rate of that on other companies—and, further, on profits made elsewhere than in the Transvaal.

As far as the Provincial Council is concerned these proposals appear to be now too late, but we still hope that the breathing space afforded by the period between now and next session of the Union Parliament will give the Government time to realise the true meaning and effect of the further legislation with which it is proposed to burden, if not crush, the mining industry.

The Prime Minister's Speech.

The closing day of the Session, last Saturday, was marked by a notable speech from the Prime Minister. He dealt in detail with the items on the preliminary agenda for the coming Economic Conference, and stated clearly the South African point of view. First came the question of developing the resources of the Empire. "Of course," he said, "we in the Dominions are responsible for developing our own countries and our own resources," but he added that "if there was a possibility of getting assistance on favourable terms by way of loans or otherwise, we should welcome it as much as anyone." Admitting that he was unaware whether such loans would be forthcoming, he expressed the hope that if they were South Africa would get its share. The next point—and in some ways the most important—is the development of inter-Imperial trade and commerce. General Smuts pointed out that we are becoming a great exporting country, and that our great problem in the near future will be to find markets for our surplus products. If, he predicted, a really serious effort were made at the Conference by all portions of the Empire to stimulate its trade, South Africa would be one of the countries most likely to benefit. He spoke of the existing preferential system, which had been, as the Dominions believe, more advantageous to the British than to the Dominion producer. Our position at the Conference will be to welcome any assistance the British Government can give in the direction of preference to our products. The existing preferences to South African products have been on a small scale and in relation to a very limited list of articles, a list limited, as the General was quick to point out, from the very nature of British fiscal policy, which has been for generations one of free trade. That, he continued, is where the question will arise in a very serious form, and he hastened to point out how great the advantage would be if we could secure, for instance, a preference on fruit and dried fruit, which will become, he believes, one of our greatest lines. He spoke of the concentration of the shipping of the world in the hands of powerful national groups, and said that one of the objects of the Conference would be to foster communications within the Empire. The question of technical research was lightly touched upon, and that of the organisation of economic intelligence led him to speak in terms of high appreciation of Mr. Karl Spilhaus' work on the European Continent. It had fully justified the expense incurred. While in London he intends to see the High Commissioner and discuss with him the appointment of an American Trade Commissioner, which may lead to large developments. As regards other foreign countries, he looks to the Conference to devise some method of using British consuls and trade agents in various parts of the world for purposes common to the Empire, believing that it will be possible for such agents to give great assistance in the promotion of Dominion trade.

The Case of Messina Copper.

An interesting review of the chequered career of the Messina Copper Company was included in the chairman's speech at the annual general meeting held in London the other day. The recital of the favoured treatment of the company by the Union Government is rather apt to make shareholders in Rand low grade mines a little jealous, and even a trifle curious regarding the reasons for such a sympathetic attitude on the part of a Government that is not particularly noted for its love of mining. Colonel Grenfell showed that the reopening of the Messina mine was almost entirely due to the concessions he had managed to secure from the Union Government, and one cannot help wondering whether a great property like the E.R.P.M., for instance, would not be more happily circumstanced were its direct benefits to the surrounding community as clearly demonstrated as they are in the case of the Messina mine. The present happy position of the company, the chairman declared, was due to "the negotiations with the South African Government for the cancellation of the guarantee of interest in the Messina Railway, amounting in all to £329,645, which were successful, to a request for a release from certain provisions of the mines and works regulations, which were a great economical obstacle to us, which was granted, and to our demand for a bonus of £5 per ton copper on production up to 2,000 tons, which were required for the electrification of a section of the Natal railways, which was conceded." Shareholders in the E.R.P.M. again, may be pardoned for contrasting this with the deaf ear turned to their appeal to maintain operations at their property, which gives employment to ten times as many men as Messina. Colonel Grenfell concluded by stating: "On 28th May we received the following cable: 'We expect smelting plant to be producing 400 tons best select copper monthly by October.' The practical effect of the various economies enumerated above, together with the increased recovery from the mill and the higher-grade ore being delivered from the mines, has been to enable us to produce refined copper landed in the world's markets at about £50 per ton, so that with to-day's prices we are working at a comfortable margin, and see no reason why this happy state of affairs should not continue." We have, of course, nothing but praise for the perseverance of the Messina chairman, which has been so singularly successful; but the secret of his success might usefully be imparted to the directors of some of the low grade mines of the Rand.

Ex-Enemy Shares.

In his report for the period up to December 31, 1922, Mr. S. V. Eales, the Custodian of Enemy Property, states that at that date the assets in the custody and control of the Custodian were valued at £9,239,697, in respect of which sum approximately 8,000 enemy nationals were interested. At the present time the assets total 13 millions sterling, and approximately, 15,000 claimants have been disclosed. It is difficult to estimate the total numbers, as large blocks of shares are registered in the names of nominees: in one instance 66,000 shares, which appeared to be the property of a bank, were found to belong to no fewer than 2,000 claimants. Mr. Eales report shows that the total releases to date under the various headings were therefore: British, Allied or neutral subjects, £1,341,173; enemy missions, £875,000; Stateless persons, £40,239; enemies who were resident or domiciled in the Union on outbreak of war, £2,320,580; total, £4,577,001. It was decided that the remaining enemy assets should be liquidated, and that certificates of credit maturing in thirty years from date of issue, and carrying interest at 4 per cent. per annum, should be issued to those ex-enemies who were not resident or domiciled in the Union on the outbreak of war. At the outset, it was decided that these certificates should not be negotiable for a period of five years from date of issue, but subsequently, by Proclamation No. 99 of 1922, all certificates were made negotiable as from date of issue. Up to March 31, 1923, 3,052 certificates had been issued, to a value of £2,321,944. Up to March 31, 1922, only 354 had been issued. As soon as a decision was arrived at regarding the position of registered shares, the companies concerned were invited to negotiate with the Custodian for the purchase of the enemy interest in their respective undertakings. Owing to the large holdings involved, any other course would, it is thought, have been fatal: to have attempted any offloading of block holdings on the open market would undoubtedly (says Mr. Eales) have seriously affected South Africa's financial position. In affecting sales the Custodian was in every case guided by three factors—namely, the market quotations, the intrinsic values (based on technical advice), and the solvency of the company concerned. The shares still to be realised have a nominal value of some £58,000, but with one or two exceptions they are unsaleable at the present time. Sales of enemy National shares were made as follows: Mining shares sold prior to April 1, 1922, £1,653,294; commercial and miscellaneous shares sold prior to April 1, 1922, £286,158; mining shares sold subsequent to April 1, 1922, and up to December 31, 1922, £4,465,653; total, £6,405,035.

S.A. Chemical Institute.

The outgoing president of the S.A. Chemical Institute, Mr. James Gray, F.I.C., delivered a very interesting address at the eleventh annual meeting on Tuesday. He covered a wide field and dealt with a number of questions of first rate importance to the professional chemist. Having sketched the history and functions of the Institute, Mr. Gray said: "The chemist emerged from his obscurity during the war, and it appeared probable that the interest and enthusiasm which the profession then inspired and the realisation of its necessity and importance to the state, not only in war but also in peace, would be so indelibly impressed on the public mind that the chemist would not be allowed to sink back into the humble position he previously occupied." Turning to the all-important question of local industries, Mr. Gray said: "The profession of chemistry is closely interested in the expansion of old and the creation of new industries, and it is gradually becoming recognised that there is no industry where the chemists' services and knowledge cannot be utilised to its benefit. . . . The future will certainly see a great industrial expansion in South Africa, and towards this desirable end it is our duty and privilege to assist. In this connection our fundamental knowledge affords us a much greater opportunity than is given to the majority of people and we should be eager to seize it and give it of our best." In another interesting passage of his address, Mr. Gray stated that to-day South Africa can easily supply its demand for chemists and supply it well. He estimated the total number of chemists practising the profession in South Africa to-day at 250, of which 130 belonged to the Institute. These figures spell progress, and the Chemical Institute is to be congratulated on the splendid work it is doing in maintaining the influence and status of the profession in this country.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal will shortly be visiting Rhodesia with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

Crown Diamond Options.

The Directors of the Crown Diamond Mining Co., Ltd., have decided, in view of the delay which has taken place in the completion of the new plant owing to the late arrival of shipments, to extend the share options expiring on September 25th, 1923, which were granted to subscribers to the issue of 200,000 shares made on the 30th June, 1922, for a further period expiring on 31st December, 1923. It is anticipated that the plant will be ready to be put into operation about the middle of next month, and it is hoped that the entire equipment will be in full running order to start washing in August.

* * *

General Mining Results.

The audited accounts of the General Mining and Finance Corporation, Ltd., for the year ended 31st December, 1922, show that working profit, after providing for administration expenses and amounts written off in respect of mining ventures and bad debts, amounted to £78,858. Adding differences between par value and purchase price of 81,202 ex-enemy shares of the Corporation acquired from the Custodian of Enemy Property, viz., £762,459, and unappropriated profit at 31st December, 1921, of £171,047, the total available is £1,015,364. From this must be deducted the amount necessary to reduce the book value of share and debenture holdings to or under market prices at 31st December, 1922, and provision against possible loss on other assets, £1,004,135, leaving unappropriated profit carried forward of £11,229. The outstanding features of the accounts are that all share and debenture holdings are shown in the balance sheet at or under the market price ruling at 31st December, 1922, and that depreciation of £1,186,786 shown on previous balance sheet is now entirely eliminated. Also, that the transformed position of the Corporation has enabled making further provisions against possible loss in respect of other assets. The directors' report and accounts will be issued in Johannesburg and London about the end of July.

* * *

British East African Minerals.

A certain amount of small prospecting is being carried on on the south west border of Kenya, and a larger amount in various districts of Tanganyika territory, says an exchange. The only prospecting of any size is that of a large development company for coal in Tanganyika territory. Mica found in the Uluguru Mountains, north of the central line in Tanganyika territory, has been collected and exported by Greek prospectors; the quality is "clear ruby" and is considered equal to the best Ceylon mica. Apart from this mica the exploitation of minerals in East Africa is still, and will for some years be, in the prospecting stage only, and apart from coal, and possibly mica, it is doubtful whether the minerals in the area are such as to provide an opening on any large scale.

* * *

A De Beers Find.

The largest diamond of its kind ever found has been recovered by the De Beers Company from the Wesselton Mine. The stone weighs 20¼ carats, is of an irregular shape and is particularly valuable on account of its rarity of colour. It is of a rich brandy shade, and because of its uniqueness and historic interest its value would be difficult to appraise, but it is said to represent anything up to £10,000. Stones of this particular tint are found fairly frequently, but usually they are of small size and never weigh much more than a single carat. The nearest approach to the recent find is one of eight carats discovered about 30 years ago, and which when cut down weighed ten carats, and was valued at £1,000.

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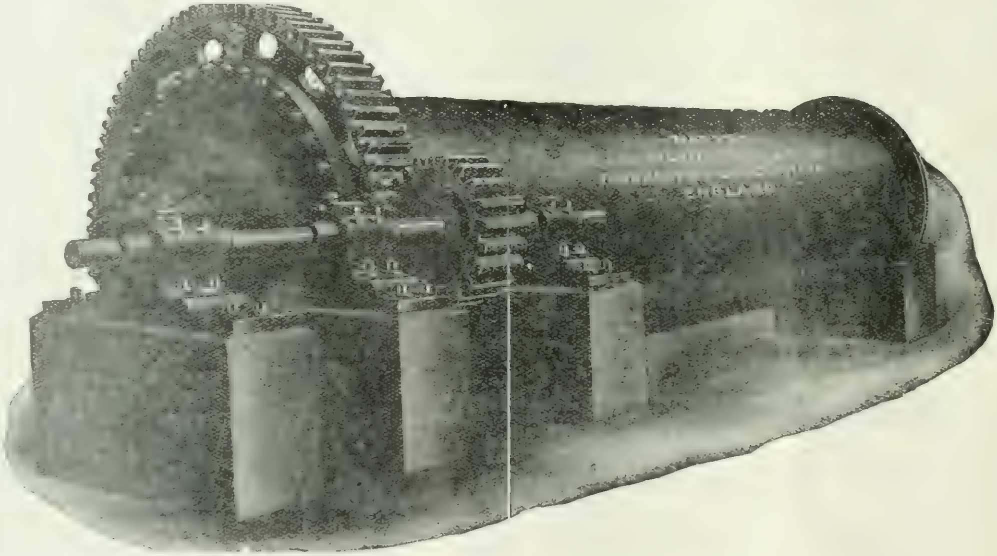

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Central Mining and Investment Corporation Annual Meeting.

SIR LIONEL PHILLIPS'S REVIEW OF SOUTH AFRICAN CONDITIONS.

The eighteenth ordinary general meeting of the Central Mining and Investment Corporation, Ltd., was held on May 30 at 1 London Wall Buildings, E.C. Sir Lionel Phillips, Bart. (chairman of the company), presided. The acting-secretary (Mr. R. Walker) having read the notice convening the meeting, and also the auditors' report,

The Chairman said: Gentlemen,—The accounts for the past year compared with those of 1921, show quite a decided change for the better in the position of the Corporation. I shall first deal briefly with the profit and loss account. You will see there that our gross earnings have increased, roughly, by £206,000. Turning to the debit side, there is a nominal increase of £27,000 in the general expenses account, which is only in a small part due to increased outlay. The contributions to our administrative charges by affiliated companies are in some cases based on the profits earned by them and are, I think very properly, placed by us to the credit of our expenses account. These items show a falling off, as the improvement in the position of the concerns in question occurred only in recent months and has not yet benefited the accounts submitted to you. South African taxation shows a reduction, as our income in that country suffered last year from the strike on the Rand.

As regards Corporation profits tax, we found that we had sufficient reserves in hand from previous years to discharge the liability of the Corporation up to December 31, 1922. The net balance carried to appropriation account has increased by, giving it in rough figures, £214,000. Subject to your consent, we have dealt with this in the appropriation account by transferring another £100,000 to the reserve fund, which we were unable to do last year.

An Increased Dividend.

We paid our usual 6s. interim dividend in December last and now recommend a final 6s. and 4s. bonus, making a total distribution of £340,000; that is 10 per cent. free of tax, or an increase on last year of £85,000. (Cheers.) Due provision is made for income tax and directors' additional remuneration, and the carry forward is slightly in excess of that of last year.

The improvement in our affairs, however, is by no means confined to the profit and loss and appropriation accounts, for, after writing off sums we thought prudent, we have a considerably larger reserve in the difference between our book prices and market values than we were able to maintain in the previous year, owing to the difficult times through which we passed. I may say that our values are entered, as hitherto, on the conservative side—a policy which, I am sure, shareholders will deem sound. As chairman of the Corporation, I am tempted to be more expansive upon this subject, but you will agree, I know, that it would be unwise to give too much vent to optimism to-day, because we are living in an unsettled era of rapid fluctuations. This statement, in any case, I trust, will satisfy shareholders that the board of directors always holds in view future contingencies in their representations.

Balance Sheet Figures.

Turning to the balance sheet, I will first compare the position of the corporation this year with last year respecting liquid assets. Our liabilities have increased by £1,720,000, to which must be added £85,000, which we propose to pay as bonus, making £1,805,000 in all. In liquid assets, it will be seen, gilt-edged securities have increased by £1,225,000, debtors by £94,000, loans by £1,047,000, and cash by £257,000, making together £2,623,000, or an improvement, as far as the liquid position is concerned, of £818,000 over last year.

On the general side of the balance sheet, however, other assets, partly due to realisations and partly to a healthy amount of writing down, appear in the accounts at lower amounts than last year. The decreases are: Under the head of "Gold and Diamond Mining," £457,000; under "Base Metals and Minerals," £139,000; under "Oil, Coal, Industrial and Sundry Interests," £118,000; and under "Land Companies and Properties," £2,000, making a total of £716,000, which, deducted from the £818,000 referred to as an improvement in liquid assets, leaves, on balance, a net increase of assets over those shown last year of £102,000, represented by the additions to the reserve fund and carry forward.

It will be readily understood as obvious that in a progressive business it is necessary to dispose periodically, and as opportunity offers, of certain accumulated assets in order to be in a position to undertake new commitments. Enterprises in process of development, especially in the earlier stages of their existence, offer greater attractions than fully developed undertakings. They involve, of course, greater risks, which have to be carefully weighed, but if one never sold, one could never buy. This applies particularly to a corporation like ours or to a company, for instance, like the Rand Mines, Ltd., with which we are closely associated, and must never be interpreted as a loss of confidence in the particular investment that may have been wholly or partially realised. The Rand Mines, Ltd., publish a list of their holdings, but I have always resisted requests to do so in your corporation, not because there is any reason to feel ashamed of our list, but because the public would draw unwarrantable conclusions from the changes we effect.

Mining Results.

I do not think it is necessary to detain you any longer upon figures in the accounts. I will therefore now proceed to make a few observations upon the work in the mines during the past year and the present outlook. I hope I may assume that our shareholders not only read the report of the board but the other very interesting matter accompanying it which is provided by our two colleagues resident in Johannesburg, and Mr. A. J. Brett, our consulting engineer. The general review of the situation and the detailed synopsis of the operations of the year are so comprehensive that I could only deal more fully with the subject by a needless repetition, or by approaching it from another angle, which would, in the event of its being a correct one, produce the same result.

There are, however, directions in which further light may be shed on the lessons to be drawn from the information available and on the prospects based upon the immediate outlook. Mr. Brett, for instance, in a table giving the aggregate results of the whole of the Witwatersrand mines for 1922, shows also the figures for 1921, and, separately, those for nine months' work from April 1, 1922, to December 31, 1922, but, very properly, he points out the danger of drawing conclusions by comparing alone the statistical results of any one given period with another, as so many factors, besides the mere arithmetical picture, have to be taken into account in arriving at the true respective merits of the work done.

For the nine months referred to it will be seen the average profit per ton milled was 7s. 11d. at standard price of gold. As working conditions were by no means settled by April 1, 1922, and therefore working costs and profits for the nine months to December 31 could hardly be deemed to have reached a normal state, I have had a table prepared drawing comparisons between the results obtained over the last four months of the year 1922 and those over a similar period in 1921, in respect of twelve of the mines with which we are handicapped, having our properties like the Robinson Gold Mines, Ferreira Deep, Knight Central, and Modder East, where the working conditions cannot be said to be quite normal.

Greater Efficiency.

This table throws a very clear light upon the effect of improved efficiency. The average number of men employed, white and native, above and below ground in 1922 was 70,891, and in 1921 it was 77,880. The tonnage broken in the stopes in 1922 was [illegible] and in 1921 102,781; the development footage 104,147, against 87,107; the tonnage milled 3,758,000, against 3,147,750; the waste sorted out 11·39 per cent., against 9·90 per cent.; the tons handled per native employed underground per month 20·1, against 18·4; and the number of white men working underground per 1,000 tons handled per month 3·29, against 4·34.

This gives eloquent testimony as to the improvement in work since the upheaval of last year, and, as far as I know, there is no reason why this satisfactory standard should not be maintained. (Cheers.) The fact is that the continued agitation and unrest to which the industry was subjected up to the terrible climax so demoralised the working man that, instead of giving a fair day's work for his pay, he resorted to practices that sapped his usefulness and brought many mines to the verge of ruin. His own occupation was thus seriously imperilled.

It is quite true that fewer white men are employed relative to the number of natives than before the outbreak, but the number displaced is insignificant compared with the number that would inevitably have lost their jobs if the industry had not been brought back to a proper state of organisation and efficiency. (Hear, hear.) Confidence in the labour unions has been considerably weakened owing to the troubles brought upon the general body of members by the leaders in unduly pushing up wages and reducing output during and after the Great War.

Labour More Contented.

In the course of my recent visit to South Africa I went down several of the mines, and, as far as I was able to judge, the men were far more contented than before the great strike at the time of my previous visit. I sincerely believe that, in every walk of life, people are really happier when they are conscious of giving good service for the money they earn than when, at the instance of agitators, their feelings towards their employers and their employment are antagonised. (Hear, hear.)

There is no unrest at present, although, at the instance of the artisans, a Conciliation Board is now taking evidence in regard to the demand for an increase of 30 per cent. in their wages. The earnings of the white population of the Witwatersrand, underground and upon the surface, compare favourably, in relation to cost of living, with wages anywhere else in the world, and the amenities of life upon the Rand goldfields are, I believe, infinitely superior to those in any other mineral industry. There are many directions in which improvements in the health conditions have gradually been introduced, significant statistics in regard to which are supplied both by my colleagues in South Africa and by the consulting engineer. There is every reason, I think, to be pleased with the way in which the work is being conducted now, but there is still a field for further economy in the cost and use of stores.

Improved Methods.

The extremely able investigations carried on by our mechanical engineering department in regard to drilling, drills, and steel consumption are bearing good fruit, and I am sure a saving, both in the amount of explosives required and of drilling in the hard rock, will be effected by the ingenious device invented for determining the direction of the holes, and improvements in shaping and sharpening bits.

Our consultant draws attention to a significant change in the method of gold recovery in the shape of discarding the copper plates upon which gold was previously recovered through the medium of a coating of mercury which has a continued attraction for gold, in favour of a return to a very primitive form of recovering concentrates, namely, the use of blanket [illegible]. The advantages of the practice now adopted are described by him, so I need not dwell upon them. This is an instance in which modern improvements that promise so well in their early use may, in the end, prove less efficient than the methods adopted by our less highly trained predecessors.

Attention is also drawn, both by the resident directors and the consulting engineer, to the great value of an adequate and regular labour supply. I think I should emphasise this point because the effect is far greater than the presence of a given number of hands at a given moment would imply. The manager, in laying out his programme of development and general mining operations, has, in accordance with their numbers, to distribute his resources over the different departments. If there is a great fluctuation in the labour available, it, of course, prevents uniformity in the work and is harassing and expensive. Hence I sincerely trust that the Union Government, in its anxiety to give the fullest opportunity to the natives of the Union, will not forget that, first of all, the contracts they make are of shorter duration than those of East Coast labourers, and that, as workers, they are not so effective.

Position at the Mines.

I shall now touch upon the operations of a few of our more important mines.

City Deep, Ltd.—I think I cannot do better than give you the text of a cable received summarising the chairman's remarks at the annual meeting of the company held on the 22nd instant, on the ore reserves and development position of this mine. It reads:—

"The ore reserves show an increase of 386,700 tons. The average monthly development footage for the last six months of 1922 was 3,452 ft., as compared with 2,596 ft. for the similar period in 1921. The average for the first four months of the current year was 2,897 ft. It is anticipated that the ore reserves at the end of the current year will be further substantially increased. During 1922 the payable ore developed amounted to 1,043,400 tons, valued at 8 dwts. Of the footage sampled 67·7 per cent. was payable, the average value being 17·3 dwts. over 26 in. In the current year the average percentage of payability for the first four months has increased to 79·2 per cent. and development values generally are encouraging. The zone of unpayability in the hitherto large area extending about 2,000 ft. to the west of No. 2 shaft appears to have been passed below the 17th level. A winze from the 19th level has been sunk to a depth of 480 ft., and has exposed values throughout this distance equivalent to 9·0 dwts. over a stoping width of 54 in. As this is the deepest development heading in the mine these exposures must be considered highly satisfactory." (Hear, hear.)

Crown Mines.

Crown Mines.—We are very pleased with the condition of affairs and the outlook of this property. Record outputs have been obtained, the average tonnage milled during the last six months of last year being 216,400 tons, or at the rate of almost 2,600,000 tons per annum. It is a remarkable tribute to the management and to the potentialities of the mine itself, that, in spite of the severe drop in the price of gold and the upheaval last year (and I would remind you again that work was carried on under normal conditions for only the last six months of the year) the profit for 1922 was only 4d. per ton lower than that for 1921. The ore reserve position remains strong, and at 8,882,100 tons shows an increase in the available ore of 179,800 tons compared with 1921, the value, 6·1 dwts., remaining the same.

Development has been carried on at a high rate. The average monthly footage accomplished in the last six months of the year was the record figure of 4,759 ft. The payable tonnage developed was estimated at 2,065,300 tons. The values in the deepest workings are quite satisfactory. The company has purchased 51·5 claims from the Langlaagte

Proprietary Company (in liquidation) which it is already working, and also 195 mining claims from the Government. These areas square off the company's southern and western boundaries, making the layout easier and prolonging the probable life of the mine. A careful geological examination has been made of the south and south-western portions of the company's area, and, while it affects the distant future, I may say the indications point to the reef underlying these claims being found at a lesser depth than the dip of the reef at the deepest points yet reached implies

Durban Roodepoort.

Durban Roodepoort Deep, Limited.—It has recently been decided to sink the circular shaft to a point at which a cross-cut will be made to connect with the existing workings. This will have the effect of improving the ventilation and working efficiency underground as well as saving maintenance costs in the present shafts. The experiment of substituting jackhammer drills for hammer boys is in contemplation, and, if successful, the number of natives required will be reduced with beneficial results on working costs.

It is pleasurable to note that costs were reduced by no less than 7s. 10d. per ton milled for the last half of 1922 compared with the corresponding period of 1921. Development disclosures last year were slightly above the average of the reserves, and it should be remarked that the percentage of payability is very high. The recent acquisition of claims from the Princess Estate and Gold Mining Company, Limited (in liquidation), will greatly extend the life of the mine, and it will also enable more lateral instead of deeper and more costly development to be accomplished. Arrangements are now being made to drive into the ground, the assays of which show good values.

The revised programme entails additional capital outlay, and an issue of £100,000 6 per cent. Convertible Debentures is being offered to shareholders. This, it is expected, will place the company on a sound financial footing. The outlook at this mine is certainly promising.

Far Eastern Rand.

Coming to the Far Eastern Rand, I may say that New Modder continues its highly successful career as regards both profits and development.

Regarding Modder B, which has hitherto had such a signally profitable record, I regret to say recent developments have been less favourable. A very large footage was accomplished last year with poor results on the whole, though in the south-eastern corner of the property the values in the drive from the Geduld raise were satisfactory. The company has a large unexplored area, and development is being pushed vigorously.

In the Modder East the policy will be reconsidered as soon as the financial position is eased by the repayment of the outstanding debentures. The prospects on the whole are not very attractive, but during the last six months we have struck some better values in a patch the extent of which cannot yet be assessed.

I do not think I can usefully add much to the other matters referred to in the printed documents that have been in your hands for some time.

Other Interests.

It is gratifying to see that the diamond business has revived, as it affects us as holders of mining shares as well as having interests in the diamond trade. Moreover, it bears upon the revenue of the country, to which I will refer anon.

It is particularly pleasing to be able to add a word upon the brighter outlook of the Trinidad Leaseholds, Limited, and to tell you that the operations have shown considerable improvement during the last 12 months. The increased capacity of the refinery has enabled larger quantities of crude oil to be treated. The sales of the company's products have correspondingly increased, and this, coupled with lower working costs, has resulted in a substantial advance in the company's profits and in its financial position.

The first well that is being drilled upon the property of the **North Venezuelan Petroleum Company, Limited**, is now down 860ft., and we are hoping that we may be lucky enough to strike a good supply of oil in this first endeavour. We must not, of course, be disappointed or disheartened in the event of initial failure. Judging by the reports of the capable geologists who have been studying the formation, there is every reason to expect that the large concessions, in which we have an important interest, will turn out satisfactorily.

Banking Interests.

There is one other item, before closing the financial review, to which I should make reference—namely, the interest we have taken in the banking firm of Messrs. Bernhard, Scholle, and Company, Limited. The operations to date lead me to the conclusion that we have entered into a sound and progressive undertaking; more than that I should not say at this stage. I may affirm, however, that your board is constantly considering advantageous directions in which some of your resources can be permanently invested. Our mission is to find investments which are likely to give fair and growing returns. We are well equipped for new business which provides a field for our able and energetic staff, to whom I now tender warm thanks. (Cheers.)

Propositions, extremely varied in character and from all parts of the globe, come before us and are never lightly turned down. We breathe an atmosphere of investigation sometimes quite oppressive, but it is part of our day's work, and if we ceased to study new projects your corporation would degenerate into being merely the holder of interest-bearing securities, good perhaps in themselves but not of an order which shareholders in a live concern have the right to expect. (Hear, hear.)

Altogether I am pleased with our general investments. We have large interests in mines and provide for their amortisation in the annual computation of values. Holders of this class of security could, of course, create a reserve fund for the same purpose, but that is an irksome task which many of them neglect to perform. Moreover, the holder of shares in your corporation has an interest not only in a variety of mines, but in many other descriptions of property.

Conditions in South Africa.

Leaving our particular affairs, I think it is desirable that I should, in the first place, say something about general conditions in South Africa and then touch upon world conditions, which, of course, all men of affairs have to follow. As far as South Africa is concerned, it is not, of course, my province here to deal with party politics; matters affecting the position, progress, and prospects of the country are in another category. The statement recently made by the Minister for Finance leaves me anxious as to whether the efforts made to balance expenditure by revenue are sufficiently strenuous. The country cannot indefinitely defer provision for the repayment of its debts, nor hope to remedy the situation by unduly increasing taxation, which would be a blow to enterprise.

The total public debt of the Union is £199,210,000. Even this large amount need not be considered excessive when the size and resources of the country, its valuable railway system and other assets are held in view. Steps, however, should be speedily taken to balance the annual budget, and again to provide, not only interest, but a reasonable sinking fund for debt redemption. (Hear, hear.) The worst of the depression in trade and commerce is, I think, past, and, therefore, general revenue may be expected to benefit, and the resumption of work in the diamond mines will again provide revenue which was cut off as the result of the Great War.

I understand, too, that the crops on the whole this year have been excellent, and, although this will not have any great direct bearing on the Government revenue, it must tend to an increase in trade, thus later on indirectly benefiting revenue. Holding, however, as sanguine a view as possible in this connection, there does not appear justification for maintaining the rate of expenditure by the Government, which has increased so enormously in the last decade.

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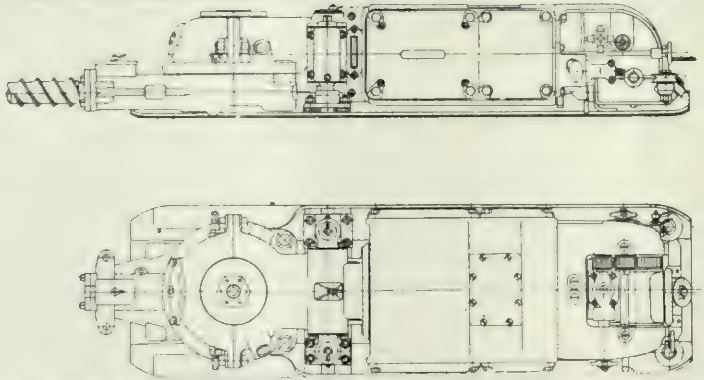

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The Minister for Railways has been more successful in approximating revenue to expenditure than the Minister for Finance.

Higher Living Costs.

As in most other countries, a higher cost of commodities has had to be met, but the wage bills have grown out of all recognition. Without attempting to discuss the whole question I will select one example to show at what an abnormal rate the increase has taken place. The Minister for Railways, in his statement, is reported to have said that, while in 1918 £7,908,732 was paid to 72,477 employees, at the time he made his speech £12,561,036 was paid to 72,218; that shows an increase of about 60 per cent., and, when we realise that a large number of natives is employed in the service whose wages have, at all events, not been materially altered, some idea can be formed of the enormous rise in the emoluments of the white employees. This no doubt is a general index of what has gone on throughout the Government service.

Rates of pay should not be applied to lower the standard of living below that which prevailed in 1914, but I am not satisfied, in spite of the higher cost of living to-day, that those conditions are not considerably exceeded. All well-disposed persons would rather see their fellow-men living in comfort than doomed to penury, but there is no royal road to that happy state. It depends mainly upon mental and physical endowment and the strength of the individual himself. Legislation is a far less effective instrument than hard work and the will to succeed. A Government, like everyone else, should measure its resources in its expenditure. When its outlay is too great it must either employ less people or reduce their pay.

The Attitude of Labour.

Trade union leaders in South Africa, as elsewhere in the world, are mainly responsible for pushing up wages unduly and for encouraging slack work. Are they blissfully unconscious of the damage resulting to those they represent? Are they misled or wilfully blind and bent on mischief? One axiom, if they are sincere, should be ever present in their considerations, and that is that the payment of more than its value for a job can only end in the job ceasing to exist. (Hear, hear.) Take hours of labour as an example. Eight hours' hard work in a closed building is a very different thing from eight hours in the open air. Working strain is, in fact, far less a question of hours than of occupation and environment.

The modern theory of " one man, one job " is probably the worst so far invented, because nothing is more fatiguing than monotony, and, if there is one thing organised labour should stand for, it is variety. Specialisation in technical industries is unavoidable, but, regarded from the human standpoint, it is least desirable. The more branches a manufacturing concern can undertake, the less danger of unemployment, because a glut in one branch may be offset by a demand in another. Therefore the more varieties of work a man can efficiently perform, the less the risk of his being unemployed. I do not believe there is such a thing as over-production in the broad sense. There will always be at times an excess of particular articles, and after an orgy of waste, such as the Great War has imposed on mankind, and the impoverishment involved, the purchasing power must be terribly limited. What is the remedy? Still greater production, for that means cheap production, greater employment, more wage-earners, and more people able to consume and create the demand. This is a general truth. Restoration of confidence and stability are two other factors of supreme moment.

We are paying the penalty now of concessions to popular clamour made, perhaps wisely and inevitably, during the stress of war, but if we are to avoid grave troubles, we must revert, as we are gradually reverting, to discipline and control in our conduct and in the whole management of affairs.

Dangers of Socialism.

We must fight the disintegrating and debilitating doctrines spread in the name of Socialism, the unquestionable author of Bolshevism. What are its fundamental aims? To equalise mankind! Is it not an insane conception with the Universe in our sight? Nothing is equal in nature. Neither the magnitude of the stars, the intensity of the sun's rays in different places, the rise and fall of the tides, the rainfall, the strength and capacity of men and animals, the productivity of seeds nor the habit and vigour of plants. Let us probe one aspect only—the economic. Can a line be drawn between the essential and the superfluous? Food and shelter from the elements are primary needs. Some clothing, too, though with training it might be reduced and even eliminated—an unpleasant picture—the amenities of life abolished, replaced by a social condition, primitive, barbaric, and uncomfortable, but modern practices are tending that way. (Laughter.) Tobacco, beer, bedding, tables, chairs, cutlery, boats, socks, brushes and combs, and a list of infinite length, are not essentials. Do away with them and millions upon millions would have no occupation.

I put the extreme to draw the true perspective. A definition of luxury is impossible. It may be interpreted as profusion and waste, which is reprehensible, or, in the sense I am using it, as the hall mark of civilisation. Moreover, the greater the abundance, the variety, and the utility of commodities that contribute to the comfort and elevation of mankind, the wider the field of employment. It is a form of mental derangement to suppose that the imposition of a Spartan way of living is going to benefit the masses. The reverse is the truth.

Sickly Sentiment.

We may well deplore the gradual extinction of the well to-do classes, the shutting up of large houses, the contraction of spending power, and the general limitation of so-called luxury because it is narrowing the avenues of employment for the wage-earners. They do not know it. Men of affairs do, and it is cowardly not to say so. We are living in an era of sickly sentimentality—not to be confounded with true sentiment—and compromise, the curse of upright action. (Hear, hear.)

The burden of debt has to be borne by those with accumulated possessions, not because that procedure is just, but because it is unavoidable. The effect is, nevertheless, to dry up the wells of capital, and, just as crops cannot be reaped unless seed is sown, so industry and commerce cannot flourish without accumulated wealth or capital. The evidence of that is provided by the reduced purchasing power of the world.

Unless trades union leaders and Socialists, with their specious theories (which appeal to the ignorant, the envious, the indolent, and the ill-placed, and may even gain their votes), change their views, they will certainly level down the well-to-do without raising the poor. (Hear, hear.) Improper concessions by Governments to sections of the community that are organised and have votes spread and stimulate the growth of evils in the body politic that lead the way to that illuminating example furnished by Russia. The paradise on earth of the theorists is chimerical. What crimes are committed, what subversive propaganda is circulated, and what evils are bred under a false cloak masquerading as liberty!

Need for Hard Work.

Forgive me for plain speaking, but I cannot be silent, knowing as I do that the only path to a restoration of real prosperity is harder and harder work, greater and greater production, well ordered discipline and control. (Cheers.) As Lord Balfour once said, it is easy to make rich men poor; the problem is how to make poor men rich. The recipe for that is individualism, every man doing the best he can for himself and his family. Incidentally, by doing that he is doing good service to his country. Grandmotherly interference by the Government in matters outside its proper sphere is detrimental. The most exalted Legislature and Cabinet have ample to do in preserving order, maintaining the moral and physical welfare of the people, adjusting taxation and fiscal regulations and establishing honourable, enduring and friendly relations with foreign nations, without meddling in the complexities of trade and industry.

Business affairs should be left to business people, men who know their jobs and find their own niches in any given sphere according to energy and ability. Nationalisation of any source of wealth means ineffective bureaucratic control, waste, political jobbery, absence of responsibility, enthusiasm or enterprise.

There is a sad lack of moral backbone in these days, a craven fear of antagonising this or that section by pursuing a line of action indisputably right. The more of us who lift our voices in support of courageous procedure the more we are helping to get it. I offer that reason as a justification for these remarks. (Cheers.)

I beg to move:

"That the report and accounts for the year ended December 31, 1922, as printed and circulated among the shareholders, be, and they are hereby received, approved, and adopted, and that the payment of a final dividend of 6s. per share and a bonus of 4s. per share, both free of income tax, to shareholders registered on the books of the company at the close of business on May 23, 1923, and to holders of coupon No. 22 attached to share warrants, in respect of the year ended December 31, 1922, be, and the same is hereby sanctioned." (Cheers.)

Mr. F. Hamm seconded the resolution.

The Chairman having invited discussion,

Mr. F. J. Dormer said he thought that all present so thoroughly agreed with everything Sir Lionel Phillips had said in his speech that there was nothing to discuss. They could only say "Ditto." (Hear, hear.)

The Chairman thanked Mr. Dormer for his remarks, adding that he was glad the shareholders were pleased with the report and were not dissatisfied with what he himself had said.

Face Value of Shares.

In reply to a question put by Mr. Holt bearing on the denomination of the shares, the chairman said that the directors were not opposed to an alteration, but they had never felt that there was sufficient demand on the part of shareholders who were considerably interested even to bring the matter up for consideration by the board. The alteration in the exchange value of the franc did not affect the position of the Corporation with regard to its arrangement with the French Fisc. The £8 shares as a multiple of £4 were a convenient denomination for the purpose of dealings in France. He was not wedded to £8, £4, or £1 shares. He was, however, averse from seeing Central Mining shares brought into the area of speculation too much. (Hear, hear.)

He would like to hope that in the far future, when he was dead and gone, this Corporation would still go on as a very solid concern, regarded in the City of London as a very sound investment, and, from that standpoint, there was no objection to an £8 share. There were many concerns with shares of a very much larger denomination. He agreed that a denomination of £8 might limit its speculative value, and if the shares were reduced to £1 he had no doubt they might have a very much larger list of shareholders and a great speculative element. He had been told that, in the case of companies with large capitals, if they had a small denomination of shares they suffered less in fluctuation than did those companies, such as this Corporation, with a share of a big denomination.

View of the Board.

He would say that if there were a general demand by the shareholders to alter the denomination of the shares, in spite of the enormous cost which would be involved, the board would take the matter into their earnest consideration; but in the absence of such a demand he was a little disinclined to do so, because the Corporation was doing very well and he was inclined to leave well alone. He hoped, therefore, he might be allowed to leave the subject in that position—that the shareholders must not think for a moment that the board were averse from any alteration of the kind if the general body of shareholders thought it desirable, but they certainly did not feel that the situation was sufficiently clear to them, so far as advantage to the shareholders was concerned, to bring the matter forward themselves. (Hear, hear.)

The resolution was then put and carried unanimously, and the chairman announced that the dividend warrants would be posted that evening.

Tribute to Sir Harry Skinner.

The chairman next moved the re-election of Sir Evelyn Wallers, K.B.E., and Lieutenant-Colonel S. H. Pollen, C.M.G., as directors of the Corporation. He was sorry to say that they had lost one of their colleagues on the board in Sir Harry Ross Skinner, the state of whose health had caused him to retire from the board and not to seek re-election. It was a matter of great regret to them to lose his services and his genial personality from their midst. (Hear, hear.)

The motion was seconded by Mr. Dormer, and unanimously agreed to.

On the proposition of Mr. A. T. Schmidt, seconded by Mr. M. Francke, Messrs. Cooper Brothers and Co. were reappointed auditors of the Corporation.

Mr. Holt proposed a vote of thanks to the chairman for his efficient conduct of the meeting, and this having been carried with acclamation, the proceedings terminated.

An Expert on Miners' Phthisis.

At the monthly meeting of the C.M. and M. Society last Saturday night, Dr. A. Orenstein gave a review of the symposium on miner's phthisis which has been running since March, 1921. The total number of contributions was 27. The majority dealt with the prevention of miners' phthisis from the standpoint of measures to be taken underground, and the necessity of adequate ventilation was stressed by the majority of the contributors. One theory of interest that emerged was that the water blast would not lay all the dust, which remained in the air for hours afterwards. It could only, and must, be removed by ventilation. Dr. Orenstein did not think that respirators were satisfactory as a means of preventing miners' phthisis. He referred to the efforts made to invent a new type of drill and to the use of dust caps over the holes. In conclusion, he said the success of the symposium was such that the Society would be justified in keeping in mind the possibility of having symposia on other subjects of interest to their members.

Mr. F. W. Watson, B.Sc., F.I.C., President, C.M. and M. Society of South Africa.

Scientific Mining.

INTERNATIONAL EXHIBITION IN LONDON—THE RADIUM WEALTH OF KATANGA.

(From our own Correspondent.)

(First Notice.)

London, June 8.

This year's Mining Exhibition at the Agricultural Hall, Islington, has assumed quite an international character. The Governments of Belgium, France, Mexico and Columbia (South America) are all officially represented. There are exhibits from the Belgian Congo, Katanga, Nigeria, Malaya, and the United States. Moreover, every phase of the mining industry in this country is emphasised in some demonstrable form or other.

Government Departments, such as the Board of Trade, Explosions in Mines Research Committee, Department of Mines, Imperial College of Science and Technology, Imperial Institute, the research divisions of British Universities, and that very progressive body the Lancashire and Cheshire Coal Research Association, have co-operated so closely that the Exhibition, far from being a mere collection of trade stalls (astonishingly representative of the latest devices though this may be) is in reality an illustration of what is being accomplished in scientific mining.

South Africa, although not officially represented—the omission may be remedied another year—is nevertheless brought well to the fore by the Imperial Institute authorities, who have made a special display of the principal non-ferrous metalliferous ores, ores of metal used in steel making, minerals of rarer metals used in gas lighting and other industries, clays, cement-making materials, fuels, refractories, abrasives, pigments, raw materials for fertilisers, and miscellaneous non-metallic minerals. The Union and Rhodesia contribute to most of these divisions.

Belgian exploitation of the mineral wealth of the Congo and Katanga regions is particularly well advertised. There are maps and photographs, samples of copper, tin and uranium ores and geological specimens from the Kasai diamondiferous region. The maps, especially those of the mining areas, are on an unusually large scale, and for this reason are of particular interest.

Radium for all the World.

That the Katanga is capable of producing as much radium as the world requires was definitely asserted by M. Sengier, a representative of the Union Minière du Haut Katanga. He was one of the lecturers at a series of meetings held in connection with the Exhibition in one of the adjoining halls. The discovery of the first radium ore in Katanga was made in 1913, he said. A second and more important discovery was made in 1915, in each case in part of the concessions of the Union Minière. The radio-active ores of the Congo—uranium and radium—were different in nature from those met with in other countries. When compared with the uranium ores worked elsewhere, and particularly in America, the Katanga ores were of exceptional richness.

An invitation to questions induced a member of the audience to ask whether the possibilities mentioned of producing "large quantities" of radium from Katanga would wipe out the countries already existing for that purpose. Radium, he pointed out, existed in different parts of the world, and, as everyone was aware, only minute quantities had been produced up to now.

M. Sengier replied: "It all depends what is meant by 'large quantities.' Would you regard it as a large quantity to double the amount now existing? So far the amount of radium known to be existing in the world is 200 grammes. We can produce 25 grammes per annum, and can go on doing so for the next ten years if there is a demand for it. That is all I can say at present. The only use for radium at present is in connection with curative treatment in medical matters, and I know of no practical use for it otherwise." He added that it was no use making tons of radium, but he would make as much as the world wanted.

Electricity in the Coal Mine.

"Recent Electrical Developments in Coal Mining" was the subject of an address by Professor Douglas Hay, of Sheffield University, at another of these lectures.

He said the coal mining industry was now almost dependent upon electricity as a source of power. Without it many mines could not be operated and others could not produce at an economic cost. "Its only serious rival, compressed air, while equalling and perhaps surpassing it in adaptability for many mining purposes, cannot compare with it in efficiency. Over-all efficiency for electricity from generator to motor is approximately 60 per cent. A similar figure for compressed air would be 15 per cent., and it is frequently lower. This difference translated into money values represents a sum of several thousand pounds per annum at a moderately-sized colliery. At the present time, however, compressed air is rendering invaluable service to the miner and is likely to continue to do so in a restricted field. In the electrical driving of air compressors we see a joint field of utility for both sources of power, and we may, therefore, regard them as of mutual service to the miner rather than as rivals. At or near the face in really gassy mines it is at present perhaps advisable to use compressed air, but I personally am not one of those who believe that it is impossible to construct electrical apparatus for safe use in inflammable atmospheres.

"Research is now defining the limits of ignition and the conditions under which the propagation of flame can occur in mixtures of fire-damp and air and coal dust and air, and once these limits are accurately defined it is certainly possible to design apparatus to meet these conditions. 'Safety' is now more than ever the watchword of the miner and the mining engineer, and safety problems are the order of the day."

Demonstrating with Fire-Damp.

Professor Hay also gave a practical demonstration of an explosion of fire-damp, three feet of which had been compressed into cylinders. In this case there was no damage, the only effect being a jarring and muffled roar. Professor Hay afterwards explained that now that electricity was more and more used in coal mines the utmost care was necessary in order to prevent switches causing a spark, and so igniting fire-damp. "It will penetrate anything," he said, "except solid unbroken casing. Recent researches have proved that this power of penetration cannot be resisted and that the only course is to allow the fire-damp to enter. We build a bomb of solid bronze round the switch, intentionally leaving a 1/16 in. aperture. If an explosion takes place it is isolated to the interior of the bomb, for though the products of the explosion escape no flame can pass out. The principle is very simple. If it had been discovered and employed a few years ago the terrible explosion at Sen Genydd in South Wales, when nearly 300 lives were lost, would not have happened. The results of our research work are periodically sent to manufacturers of electrical machinery and incorporated in their new plant."

SYDNEY MINT TO CLOSE.

The Royal Mint in Sydney, which is involving New South Wales in a loss of £7,000 annually, is to be closed as from 1st January next.

The Week in the Sharemarket.

DULL BUT STEADY—DIAMONDS QUIET—POSITION SOUND.

Steadiness has been the feature of the market throughout rather a dull week. There has been a fair amount of investment business in the better class shares, but little speculation. The position in London is similar. There has been a movement in gold of a few points downwards, but the price is still as high as last month. The half-year ends with the market quiet, but hopeful for the autumn season. Corner House stocks were notable for selling of Modder Easts and some buying of Modder B. There is a tendency in some quarters to link these two stocks together. Modders have been firm, and Nourse, City Deep and Durban Deeps hardly varied in price. T.G.M.E. and Glynn's have been inquired for, and there have been some bids for Geldenhuis Deeps. Barnato stocks are, on the whole, unchanged, except New States, which have been sold. There has been moderate business in Langlaagte Estates. General Mining stocks are steady. The report of the parent house has been well received. The chief business in Goldfields interests has been in Robinson Deep debentures, which are becoming a favourite for investors. Of Union Corporation stocks, Modder Deeps eased towards the end of the week on a little selling, most of the buyers being for the time full up. Gedulds are practically unchanged. The Anglo-American group have merely fluctuated fractionally. The diamond market has shared the lassitude of the gold stocks, except in the case of Crown Diamonds, which have shown some slight signs of life. The options have been extended to the end of the year, and the House has welcomed the approaching entry of the plant into full working condition. The market considers that under fair conditions there should be something interesting in these shares. Consolidated Diamonds have been dull. Zaaiplaats Tins are said to be encountering good development, and the shares have recovered a few pence of their recent drop. The investment market has been interesting. There has been a fair business in Loans. Rand Water Boards have been bid for, without business, and Reserve Banks are steady at about last week's price. National Banks fell away at one time to £6, but have since recovered to £6½. The drastic action taken by the directors, which will be revealed at the meeting, is in the best interests of the public and shareholders alike, and will result in placing the Bank in a stronger position. It is probable that a distribution to shareholders will be possible next year. The end of the half-year is always associated with a certain slackness in the market, but it seldom finds the open accounts so small in number as they are now. On Monday shares will be quoted "ex dividend," and, in the present sound state of the industry, the drop of the dividends should be quickly recovered. It is probable that the recovery will go further, as there are several properties which will show much better returns in the latter half of the year.

	Fri. 22nd.	Sat. 23rd.	Mon. 25th	Tues. 26th	Wed. 27th	Thurs. 28th.
Anglo-Am. Corp. . .	22 9*	22 9*	23 6*	22 9*	22 7	22 0*
Apex Mines . . .	6 6†	6 6†	6 0*	6 6†		6 0*
Aurora Wests . .	6 9	—	6 3*	6 0*		6 0*
Brakpan Mines . . .	60 0	—	—	60 0*	60 0*	61 6
Bricks and Potteries	—	5 0*				5 0*
British South Africa	12 0*		12 3*	12 6*		
Bushveld Tin . . .	0 3*	—	0 3*	0 3	0 3	0 3*
Cinderella Cons. . .	—	—	3 0*			
City and Suburbans	2 11*	2 11*	2 11*	—	2 11*	2 11*
City Deeps . . .		54 0*	54 6*	—	54 0*	54 6
Clydesdale Colls. . .	17 0†	16 6*	17 3†	—	16 3	16 0*
Con. Diamonds . .	19 0*	19 4½	19 6*	19 3*	19 3	19 1*
Con. Investments . .	32 0†	32 0†	29 0*	—	32 0†	—
Con. Langlaagtes .	—	—	—	15 0*	15 0	14 6*
Con. Main Reefs	8 4*	8 5*	8 6		8 3*	8 3
Coronation Colls. . .	31 0†	27 6*	30 0†	30 0†	30 0†	30 0†
Do. Syndicates . .	5 1½		5 0*	—	4 9*	5 0
Crown Diamonds . .	6 4	6 4	6 6		6 6	6 6
Crown Mines	49 6*	49 0*	50 0	50 0	50 0	49 6*
Daggafontein Mines	3 1*	3 0*	3 0*	3 1	3 0*	3 0
Durban Rood. Deeps	15 6*	15 10*	15 10*	15 9*	15 9	—

	Fri. 22nd.	Sat. 23rd.	Mon. 25th.	Tues 26th.	Wed 27th.	Thurs 28th.
East Rand Coals	1 3	1 4†	1 5†		1 3†	1 2†
East Rand Deeps	0 7*	0 7*	0 7	0 7*	0 7*	0 7*
East Rand Minings	10 0†	10 0†	10 0†	10 0†	10 0†	—
East Rand Props	4 9*	4 10*	5 0*	4 10*	5 0*	5 0*
Eastern Golds	0 4	—	0 4*	0 4*		0 4*
Ferreira Deeps	7 6†		7 6†		—	—
Frank Smith Dmds	3 2*	3 2	3 2*	3 2	3 3†	3 0*
Geduld Props.	62 6*	61 7*	62 3	61 6*	61 6*	61 9*
Geldenhuis Deeps					4 0*	
Glynn's Lydenburgs	12 6	12 6*	12 6*	12 3	12 0	11 6*
Govt. Areas	115 0	115 0*	115 6*	116 0*	116 0*	115 6
Hume Pipes .	8 6*	8 0*	8 6*	9 0*	8 0*	8 6
Lace Props. .	7 9*	7 6*	7 9*	7 0*	7 9	7 9*
Langlaagte Estate . .	22 3	22 9	23 0	22 6	22 6	22 3*
Leeuwpoort Tins	2 6		2 6†	2 5*	2 1	2 5*
Luipaardsvlei Est.			4 6†			
Lydenburg Farms	—	—	—	3 0†	3 6†	—
Meyer & Charlton .		70 0*	—	—	70 0*	—
Middelvlei Est.	1 1*	1 0*			1 1*	—
Modder B's. .	24 9*	25 0	25 0	24 0	24 10*	24 10*
Modder Deeps	13 6*	13 7	14 3	14 0*	13 9*	13 9
Modder Easts	6 3*	6 2	6 0*	5 6	5 6*	5 9
Natal Nav. . .	27 6*	27 6*	28 0	27 6*	27 6*	27 6*
National Banks . . .		£7	—	£6½	£6	—
New Eland Dmds. .	39 6†	39 0	38 0*	38 0*	37 6*	39 0
New Era Cons. .	—	6 6*	6 6*	6 6*	6 6*	6 10
New Geduld Deeps	0 6	—	—	—	—	—
New Kleinfonteins . .	—	5 0*	5 0*	5 0*	4 10*	5 0
New Modders .	79 6	79 6*	80 0	79 9*	79 9	79 9
New Primrose . .	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
New State Areas . .	35 9*	36 0†	36 0†	35 9	34 3*	33 0
Nigels	8 0*	8 0†	—			
Nourse Mines . .	14 9	14 9*	15 0	14 10*	15 0	15 0
Pretoria Cements	38 6*	39 3	39 0	39 0*	38 6	38 0*
Rand Collieries . . .	1 0*	—		1 0*	1 0*	1 0*
Rand Nucleus	0 11*	0 11*	0 11*	0 11*	0 11*	0 11*
Randfontein Central	12 0*	—	—	—	11 6	11 0*
Randfontein Est. .	19 6	19 6*	19 9	19 6	19 6	19 0*
Rouxville Dmds. .	1 0*	1 0*	1 0*	—	1 0*	1 0*
Roberts Victors . .	—				8 0†	—
Robinson Deep A .	34 7	—	34 6*	34 6	34 3*	34 0*
Robinson Deep B	12 3*	12 3*	12 6	12 3*	12 3*	12 3*
Rooibergs	3 0*	—	3 0*	3 0*	3 1*	3 1*
Ryan Nigels . .	—	—	2 6*	—	4 0†	4 0†
Rose Deeps . . .			—			11 0*
Shebas	2 11†		2 10†	—	—	
Simmer and Jacks .	2 10*	2 10*	2 11*	2 11	2 11½	2 11
S.A. Breweries	31 6*	32 6†	32 6†	32 6	32 6†	30 0*
S.A. Lands	3 5	3 4*	3 4*	3 4	3 1	3 0*
S.A. Reserve Bank.	£136*	£136*	£137	£136†	£135½†	£135†
Springs Mines . .	47 0	47 3†	46 6*	46 9*	47 0	40 6*
Sub Nigels . .	10 3*	10 9	11 0†	10 9	10 10½	10 3*
S.A. Alkali . . .	12 6*	11 9*		12 6†	12 0	11 0*
S.A. Townships . .	10 6*		10 9*	10 9*	10 9	10 9*
Transvaal Lands . . .	—	18 0†		—	17 0†	18 0†
Trans. G. M. Est. .	—	9 0†	—	8 6*	—	9 3†
Transvaal Silvers .	—	14 0*	—	14 0*	13 6*	13 0*
Tudors	0 6†				—	
Union 5 p.c. . .	£101	£101½	£101½*	£101½	£101¾	£101¾*
Van Dyk	1 0*		1 0*	1 0*	1 0*	1 0*
Van Ryn Deeps . . .	68 6*	68 6*	68 6*	68 6*	68 9†	68 6
Van Ryn Estates	14 0*		14 3*	14 3*	14 6	14 0*
Village Deeps	12 6	12 4*	12 3*	13 0†	12 6*	—
West Springs . .	19 3*	19 6*	19 6	19 6	19 3*	19 3*
West Rand Estates	2 3*	2 6†	2 0*	2 6†	—	
Witbank Collieries .		—		31 0*	33 0†	31 0*
Witwatersrands		16 9*	16 9	16 9	16 0*	16 0*
Wit. Deeps . . .	16 0*	16 6†	16 0*	16 3	15 9*	15 0*
Zaaiplaats Tins . .	4 0*	4 0*	4 0*	4 0*	4 0	4 3

* Buyers. † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

ENGINEERING SECTION.

New Floating Water Wheel.

VAN NIEKERK'S PATENT.

Mr. M. van Niekerk, of Prieska, has recently patented a floating water-wheel which offers great possibilities of application. A model wheel of a size for actual use has been working for some months in the Orange River, and has undoubtedly proved its efficiency; certain minor improvements will be made on future machines.

The "wheel" is essentially a corrugated iron drum of sufficient buoyancy to float in the water when fully fitted the depth to which it sinks can be adjusted by admitting water to the interior. The model drum is 12 ft. long by 4 ft diameter. At each end is an iron framework or "hub" of same diameter as drum, carrying the axle on which the wheel rotates. The two hubs are connected by eight wooden battens running the whole length of drum. The vanes are eight in number and consists of sheets of galvanised iron about, 13 ft by 1 ft. fastened radically and slightly spirally to the batterns and hubs by iron supports.

Around the whole drum is a framework of strong deals bolted together which carries the bearings for the axle, and also (on an extension at each end), two small pumps geared to the axle by bevel wheels. By careful arrangement of the various parts and also by a boom attached to the river bank, this framework is made to rest horizontally on the surface of the water.

The gearing has been arranged to suit the capacity of the pumps, which have a 3½ inch stroke and 6 inch cylinder, the power being transmitted by simple crank action. The water can be pumped from any suitable depth in the river and is carried by flexible pipes to the main pipe, 1½ inch bore, which is fastened to the boom abovementioned

Universal hinge joints are used at each end of the boom so as to allow free lateral, or up and down motion to the machine, which thus rises or falls automatically with the water level. A slight lateral motion is also allowed, but excessive motion is prevented by two guide ropes fastened to the outer end of framework and anchored to the bank.

Should the water fall dangerously low, the machine can be made to rest on the river bed by hinged legs attached to corners of frame.

The capabilities of the contrivance have not been fully tested as yet, and the actual power production is not known So far it has given a full supply 10 to 12 gallons per minute of water through a 1½ inch main 210 feet long, delivering at a height of 40 feet above river level.

The advantages of this invention are obvious. It is portable, the whole thing can be carried on a wagon from one place to another when necessary. No permanent constructions, sluices, piers or foundations are necessary. By a modification of the transmission gearing, pumps or other machinery could be worked on the river bank instead of in the water. Lastly it requires no more attention than a wind pump and will work as long as there is a current in the river to drive it. Such an invention ought to have a wide application and the inventor, who has had no engineering training deserves great credit and, one hopes, will receive adequate reward

The Crown Diamond Mining and Exploration Co., Ltd.

CIRCULAR TO SHAREHOLDERS.

Dear Sir or (Madam).—The Directors have decided, in view of the delay which has taken place in the completion of the new plant owing to the late arrival of shipments, to extend the share options expiring on September 25, 1923, which were granted to subscribers to the issue of 200,000 shares made on June 30, 1922, for a further period expiring December 31, 1923.

It is anticipated that the plant will be ready to put into operation about the middle of next month, and it is hoped that the entire equipment will be in full running order to start washing in August.

By Order of the Board.

THE AFRICAN & EUROPEAN INVESTMENT CO., LTD.,
Secretaries.

Per R. W. Townsend

Johannesburg.
June 25, 1923.

RUSSIA'S RICHEST MEN.

Statistics recently compiled in Moscow by the Fiscal Authorities of the Soviet dealing with private fortunes acquired of late in Russia show, says the *Daily Mail*, London, that the eight richest men at the end of last year were Trotsky, Zinovieff, Djerjinski, Rakovski, Krassin, Bogdanoff, Kourski, and Vladimiroff, the bright particular stars of Bolshevism.

If the attempt made last year to overthrow the Government had succeeded we should probably find today that the eight wealthiest men in the Union would be the eight persons who were specially instrumental in fomenting the revolution in March, 1922, and should the Labour Party in South Africa, with its communist doctrines, ever dominate the country, it is pretty certain that the Labour leaders who now never lose an opportunity of throwing stones at what they describe as "Capital," would be the wealthiest inhabitants of the State

Heating by Electricity in Industry.

TEMPERATURES NEARLY AS GREAT AS THE SUN'S OBTAINED IN MODERN ELECTRIC FURNACES—THE VARIED USE AND RAPID GROWTH OF INDUSTRIAL HEATING AS AN IMPORTANT FACTOR IN CONSERVATION.

It is only within the past decade that engineers have come to the realisation that heat generated by electricity has enormous possibilities in industrial development. Of course it has always been known that electricity passing through a wire created heat of varying degrees and intensity, but formerly this was considered more in the light of an unavoidable nuisance than otherwise.

As the electrical industry developed, however, and central stations of ever-increasing size were built, engineers began to look for means whereby these stations could sell their electricity to the best advantage to themselves and the customers they served. This resulted in the rapid development of electric heating devices until to-day more than 500,000 K.W., or 670,000 H.P., is used for industrial purposes alone in the United States. This figure represents about 7½ per cent. of the electric energy used for all other industrial uses, for it has recently been estimated that about 9,000,000 h.p. is used by electric motors in manufacturing in the United States.

Conservation as a Factor.

The principal factor contributing to the increased use of electric heating appliances is the way in which they answer the modern demand for conservation—conservation not only in the saving of natural resources, but the saving of time and materials, and the reduction of the uncertain "personal element" to a minimum as well as the improvement of the product. Despite the fact that the conversion of fuel into electric heat is only reached after a long and complicated series of steps, whose ultimate efficiency is but 20 per cent., it has met requirements so well that, in time, it will undoubtedly replace the use of fuel heating to an enormous extent. At Niagara Falls, for example, fully 90 per cent of the energy now generated is used for industrial heating purposes. In fact, its development in recent years has gained such headway that it bids fair to surpass, in energy consumption, both the light and power branches of electrical service together.

Hydraulic Possibilities

With the enormous amount of undeveloped hydraulic power available throughout the world, it is not easy to predict where the final stopping point will be, because it is by water power that electrical energy can be most efficiently developed as regards money input versus output. The limits to the use of electricity, produced hydraulically can be grasped only when it is realised that there is one hundred and twelve million potential horsepower on the continent of North America still undeveloped.

Most industrial heating of former days was obtained through three mediums—coal, oil or gas. Taking coal as an example in reaching the exceedingly high temperature necessary in some processes, 88 per cent. of the B.T.U., or heat units in a pound of coal are used up in merely raising the fuel and the excess air of the furnace to the required temperature, thus wasting the natural resources upon which we depend so much, and making the average industrial town anything but a healthy or pleasant place in which to live.

Economical Heat.

With electrical heat, temperatures that are impossible to fuel generated heat are reached quickly, economically, and without any consequent detriment of the surrounding atmosphere. Along the same line of conservation, manufacurers are beginning to realise that the elimination of spoiled, and unfair products, whether rendered so by inefficient and unreliable methods of heating, or by careless employees is just as much conservation as anything else. Also the elimination of unnecessary labour, and the establishment of cleaner, safer working conditions tend toward the attainment of the rapid rate of production which is the paramount demand of the present industrial era.

Thus the variety of processes to which electrical heat is applicable has given rise to many devices for its use, ranging all the way from a metal melting furnace, whose production is 18,000 lbs. per day, through the oven field, to small metal melting pots with a capacity of 25 pounds of metal. In the domestic field 25,000 electric ranges and an uncounted number of small household appliances are in use. All furnaces, ovens, etc., are remarkable for their reliability, economy and the perfection of their finished products.

The Modern Brass Furnace.

To take the brass furnace as a typical example of what can be done by the application of electric heat in overcoming the difficulties of specialised operation, in the fuel heated brass furnace, one of the greatest drawbacks is the loss of zinc through volitilisation and oxidation due to the high temperature of the applied heat, as well as the atmospheric conditions surrounding the bath.

In the electricially heated brass furnace both these conditions are absolutely under the control of the operator. There are several types of brass furnaces in use to-day—namely, the arc type, which has no automatic control but a low first cost, the induction which just fits a field where productions can be placed on a 24 hour basis, the carbon resistor, best for temperature not exceeding 1,000 c., and the muffled arc type, more expensive, but the only one that can be operated automatically.

This furnace can be operated at higher temperature than the carbon resistor type, and, at the same time can be regulated to operate at lower temperatures economically but with the additional feature of automatic control.

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Delagoa Bay Coaling Plant.

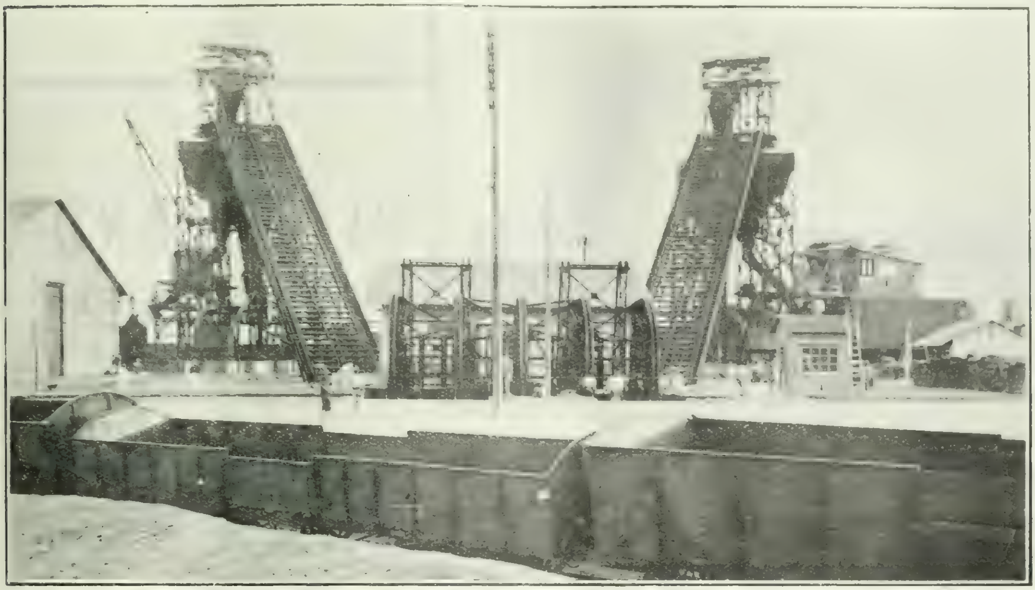

Photo by: Hocking & Co., Lourenço Marques.

New Coaling Plant of the Port of Lourenço Marques (Portuguese East Africa) inaugurated on the 10th June, 1923. Nominal capacity six hundred tons per hour. In the foreground is the Provay Patent Tippler, capable of dealing with up to twelve hundred tons per hour when handling trucks of fifty tons capacity each.

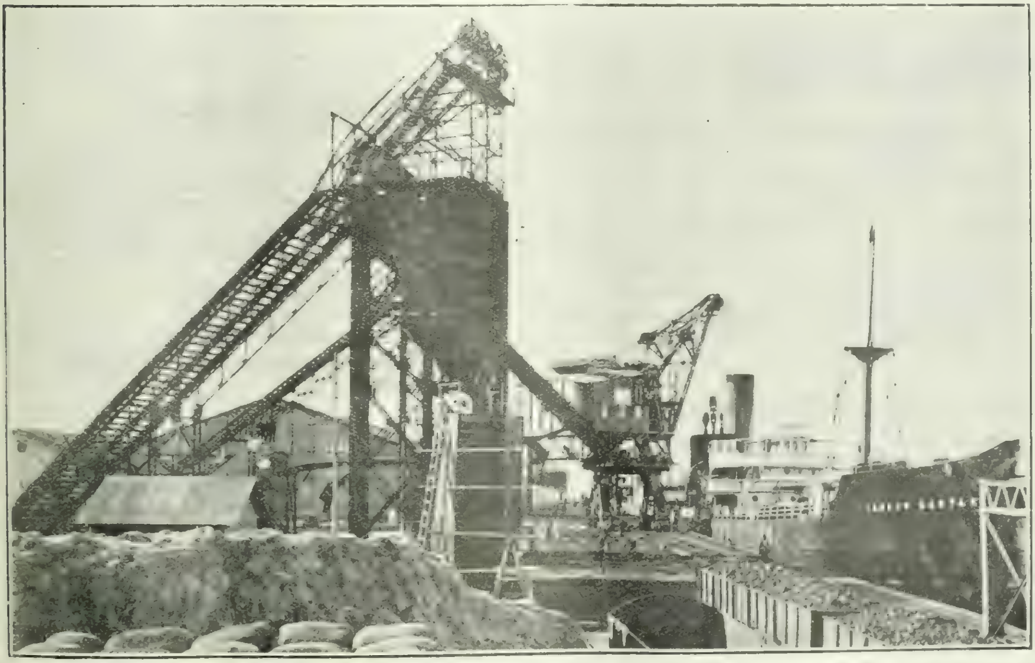

Photo by: Hocking & Co., Lourenço Marques.

View of the new Coaling Plant of the Port of Lourenço Marques (Portuguese East Africa). The Union Castle Mail Steamship Company's Steamer "Carlow Castle" was the first to load at this plant, which was inaugurated on the 10th June, 1923.

G.W.R. Co.: Bridge over River Towy, Carmarthen, Wales.

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RHODESIA'S MINERAL OUTPUT FOR MAY.

AN ALL-ROUND IMPROVEMENT.

Substantial increases in the output of gold, silver and base metals are indicated in the May return of the Rhodesia Chamber of Mines. The following is the summary and comparisons:

		Value.
Gold (fine ozs.)	54,737·05	£245,870[1]
Silver (fine ozs.) ...	12,248·12	1,932
Coal (tons raised)	52,662	17,789
Coal used for coke	—	4,191
Copper, blister (tons)	249·29	16,547
Chrome ore (tons)	9,387·30	24,878
Asbestos (tons)	1,642·11	37,234
Arsenic (tons) ...	112·98	3,357
Mica	7 tons 1,262 lbs.	1,908
Diamond (carats) ...	42·75	245
Total		£353,951

[1] Includes £13,169 gold premiums.

Comparisons.

Gold—

May, 1923 (fine ozs.)	54,737·05
April, 1923 (fine ozs.) ...	53,200·29
Increase (fine ozs.)	1,536·76
May, 1923 (fine ozs.)	54,737·05
May, 1922 (fine ozs.)	53,920·41
Increase (fine ozs.)	816·64
May, 1923	£245,870
April, 1923	£232,765[2]
Increase	£13,105
May, 1922	£273,562[3]
May, 1923	£245,870
Decrease ...	£27,692

Silver—

May, 1923	£1,932
April, 1923	£1,295
Increase ...	£637
May, 1923	£1,932
May, 1922	£1,775
Increase	£157

Base Mineral Production—

May, 1923	£106,149
April, 1923	£93,900
Increase	£12,249
May, 1923	£106,149
May, 1922	£74,889
Increase	£31,260

Total Mineral Production—

May, 1923	£353,951[1]
April, 1923	£327,960[2]
Increase	£25,991
May, 1923	£353,951[1]
May, 1922	£350,226[3]
Increase	£3,725

[1] May, 1923, includes £13,169 gold premiums.

[2] April, 1923, includes £8,534 gold premiums.

[3] May, 1922, includes £15,318 gold premiums.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

July 4th.—New Eland Diamonds, Ltd. (a), 11 a.m.; special meeting immediately afterwards.

July 19.—Transvaal Consolidated Lands (s), 12 noon.

August 10.—Transvaal Consolidated Lands (s), 12 noon.

Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd (a), 11.30 a.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

Metal Quotations.

London, June 25.—Standard copper, £65 17s. 6d. cash, £66 7s. 6d. three months; electrolytic copper, £72 10s. buyers, £73 sellers; copper wire bars, £73; standard tin, £188 15s. cash, £189 7s. 6d. three months; foreign lead, £25 2s. 6d. prompt, £24 7s. 6d. forward; quicksilver, £10 10s. per bottle; bar silver, 31⅛d.; new gold, 89s. 3d. per oz.

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Liquid Oxygen in Mining*—IV.

By Alfred James, M.I.M.M.

The following precautions are recommended by the Mining Association of Alsace-Lorraine, who, having investigated the matter with care and thoroughness, have issued a memorandum on the subject from which this information is taken.

1. Do not carry together liquid oxygen and a naked light

2. Avoid absolutely the proximity of calcium carbide to the air supply of the compressors, and allow no opportunity of contact of this material with the container vessels or cartridges. Acetylene mixed with oxygen becomes explosive, and has not infrequently damaged the liquefying apparatus. In cartridges it seems beyond control.

3. Never fire an untamped fuse.

4. Tamp carefully to avoid breaking or disturbing the fuse.

5. Employ fuses rather longer than with dynamite, and projecting sufficiently away from the vent of the hole.

6. In cases of misfire, await half an hour before messing about with the hole, then withdraw the charge entirely. Insert a plug of fat clay before recharging and retamping.

Conveyance.

The containers are unsealed to prevent explosion. A 5-lit bottle, weighing 25 lb., loses by evaporation 15 per cent. to 18 per cent. of its contents in 24 hours; with a 15-lit. bottle the loss is 10.5 per cent.; with a 50-lit. bottle, 5 per cent.; and with a 100-lit. bottle, weighing 170kg., only 3 per cent. The losses increase with old containers and during transit. I prefer to disregard the above figures, based probably on new vessels, and to reckon on an actual production of two and a half times theoretical. It is on this figure the above statement of economies is based. If containers are improved and no longer lose 2 per cent. per hour, or 4 per cent. to 5 per cent. in the two hours' journey from factory to face, so much the better for users! Arrangements are now being made to send liquid oxygen to mines some kilometres distant by means of the existing aerial tramway.

Output per Litre of Production Capacity.

In Lorraine we find at one group of mines an output of 12,000 tons a day, for a production capacity of 220 lit., and an actual consumption of 150 lit. per hour. At another mine 260 tons are produced for an actual consumption of 2.5 lit. per hour. In Mexico a production capacity of 27 lit. per hour suffices for an output of 450 tons a day, and in addition for the supply of the oxygen necessary for the welding and cutting in a large engineering works.

Strength of Explosive.

It may be accepted that the calories generated by the explosion of liquid oxygen are greater than with gelignite of highest grade, and that liquid oxygen is one of the most powerful explosives capable of use in mines. The German tests with a Bichel gauge showed the following weights necessary to obtain a pressure of 40 kg. per sq. centimetre:—

	Grm
Burnt cork, petroleum and liquid oxygen ...	58
Simplon Tunnel mixture	84
Blasting gelatine	86
Gelatine dynamite	102
Carbonite	170
Blasting powder	283

Tests at Pittsburgh (made by the U.S. Bureau of Mines Rice), with crude oil and kieselguhr cartridges, gave a strength of from 4 per cent. to 12 per cent. greater than 40 per cent. nitro-glycerine. With Trauzl blocks liquid oxygen gave a 20 per cent. greater enlargement than with 60 per cent. straight nitro-glycerine dynamite.

As for a liquid oxygen explosive combination of greater strength or brisance, weight per weight, than the strongest blasting gelatine, the oxygen-aluminium combination appears to have already passed far beyond this point. Cartridges are also now made of a polymerised acetylene copper product containing only a minute quantity—say, 0.25 per cent. of copper, of enormous absorption capacity, and of a strength claimed to be eight times greater than that of the oxygen-soot combination.

Cartridges modifying this extraordinary shattering power are also in successful use, and it is anticipated that modified cartridges will restore its use even to coal mines, whence its larger-than-permitted flame has caused its exclusion.

Space and Power Required.

An installation producing 30 lit. per hour requires 30 ft. by 50 ft. of floor space and about 74 h.p. An installation for 75 lit. per hour requires 50 ft. by 50 ft. of floor space and 135 h.p.

Installations.

There are two types of installations in use, the Linde and the Claude; the latter uses much lower pressures, claims a higher output per kw., and has of late been receiving preference. In both systems the efficiency has been greatly increased, so that it is now possible to obtain liquid oxygen at little more than half the power taken by the earlier and smaller installations.

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* From Paper read before the Institution of M. and Metallurgy.

(To be continued.)

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TRADE SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET—FUTURE CONDITION HOPEFUL—IRON AND STEEL CONDITION, LOCAL AND UNIVERSAL—RUHR AND EUROPEAN PROBLEMS—TIMBER AND BUILDING MATERIALS—JOHANNESBURG COUNCIL—RECENT TENDERS.

General.

June month has again not belied itself as regards business activity, and has closed exceedingly quiet. This quietude, as stated at its commencement, being not unexpected, but generally awaited, merchants are in no wise disappointed with the results attained, and are looking forward hopefully to considerable improvement in business conditions during the coming July month, when financial stringency should be considerably relieved. The mines, which naturally, in view of the close of their financial year, reduced their purchases to the lowest possible level, are bound, considering their depleted stocks, to recommence buying stores and material at no distant date, and it is confidently anticipated that their orders during next and succeeding months will be on a scale larger than for some time past. In conversation this week with captains of industry, a very cheerful note was sounded as to commercial operations very shortly. As a feather thrown into the air indicates more or less the direction in which the wind blows, so, in the opinion of far-seeing commercialists, there are at present many "happenings" which, individually and together, convince even unbelieving Thomases that really good times will, within measurable time, override the present depression. The Provincial Council has got a loan of a quarter of a million to tide itself over for a time, which in any event must necessarily circulate much-needed cash in the Union and into channels which have been starving of late. Another point in favour of better conditions is the adoption in full by the Johannesburg Town Council of the proposals for a new power station here by its experts. £550,000 has been voted, which means a very big thing in the shape of wages and the relief of the unemployed presently in our midst, and of course to the big benefit of the local mercantile community. Another favourable factor to be added to the list is the probable establishment of a very much larger power station amongst our coal fields at Witbank. The contract will, it is thought, run into some two to three millions sterling, and will probably take some two years or more to complete. It is, of course, unnecessary to labour the point what incalculable advantages would accrue to the Union in the development of its resources by the installation of such a huge enterprise. Such a huge expenditure would not, of course, be contemplated unless the future of the Union warranted it in the shape of coal, gold and other minerals. Again, what this scheme will mean to our industrial progress if carried out—and our shrewd and far-seeing informant has no doubt whatever of its early birth and development—is apparent to the man in the street.

There is, unfortunately, not much sign at present of a Ruhr or of a general European settlement, but commercial circles are still not without hope that we may shortly receive news of a general approach to more settled conditions there. Although this may be the father of the thought, there can be no doubt that without some bridging of the present apparently impossible conditions no substantial relief can be looked for in general business conditions either here or in the old world.

The building trade is generally expected to continue good for some considerable time, with every probability of added activity. Engineering works also are looking forward to increased activities in construction work next month. Prices for iron and steel material are keeping, on the whole, very steady; there is, of course, no question of their running away, but rather *das gegentheil* should the present activities of the English Government, which one must believe are as untiring towards a satisfactory settlement of Continental questions, as is generally hoped should eventually prove successful.

Iron and Steel.

Business, as during the past few weeks, has ruled exceedingly quiet. Stocktaking time has made itself felt as usual, but better conditions are expected to rule next month and onward.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes about 30s. a ton more; ⅞ and 1 in., 25s.; cheques plates, 27s. 100 lbs.; imported flats, ½ x 3-16, ½ x ¼, 30s. per 100 lb.; ¾ x ¼, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ¾ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ¼, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 1½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅝ up to 20 gauge, 1s. 8d. lb.; for lighter gauges 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag), 2s. 8d. per lb. Phosphor tin, 2s. 10d. per lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 1½d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7-16, 10d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅝ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅜ in. and ¼ in., 3¼d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in. to 36 in., 10s. 6d. to 11s. 6d.;

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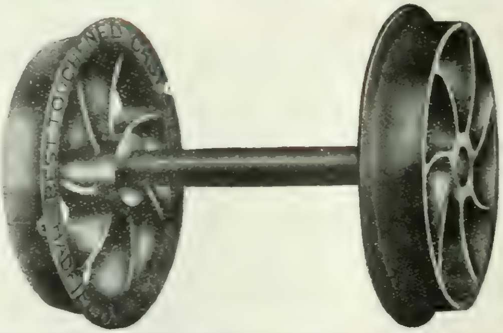

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42 in., 20s. 6d.; piping, ½ in., black, 5d.; 1 in., [illegible]; 2 in., 1s. 2d.; galvanised, ½ in., 5¼d.; 1 in., 7¾d.; 2 in., 1s. 7½d.; ½ in. steam, 5½d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 56s. and upwards; barbed wire, "Shortthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, [illegible] per ton of 2,000 lbs.

Britain: Mail Advices.

Iron and Steel Outlook.—In mail week, on account of the holidays, business was practically lifeless. Little interest has been displayed in Continental offerings.

Pig Iron.—Midland No. 3 has been offered at £5 per ton, basic iron at £5 17s. 6d.

Semi-finished Materials.—Belgian 3-in. and 4-in. billets have been sold at about £6, f.o.b., and 2-in. billets at £6 2s. 6d. French wire rods, £11 5s.; German Siemens-Martin sheet bars, £8, f.o.b.

Finished Materials.—Belgian steel bars, £7 10s., f.o.b., and ½-in. plates at £9 15s.; plates, ¼ in. and 3/16 in., [illegible] f.o.b.

The Continental Steel Market and the Ruhr Position.

According to the *Ironmonger* in mail week, a decided change has recently come over the iron and steel market, and instead of being comparatively free from Continental competition, British manufacturers are again finding their offers in the home and foreign markets keenly contested. Probably the general slackness of trade is partly a result of the price-cutting that is going on, because merchants are shy of buying in a market where the tendency is steadily downwards. Since the end of April the prices of Continental semi-finished and finished steel materials have fallen about £3 per ton all round, and further reductions are expected. Against this the British quotations have remained nominally unaltered, although, in fact, it has been possible to get concessions from our makers. Continental competition was quiescent during February, March and April, owing to the suspension of the deliveries of German coke which followed the occupation of the Ruhr, and it soon became clear that whether or not the French, Belgian and Luxemburg works would remain out of the market depended upon the success of the German policy of passive resistance. The conditions on the Continent still are extremely obscure, but the French have at last been able to secure enough coal and coke to restart some at least of their blast furnaces and steel works. An official statement from Paris asserts that about 8,000 tons of Ruhr coke is now going into France daily, and that this amount surpasses the needs of the French Metallurgical industry, which only requires 6,000 tons a day. It is further claimed that enough coke has been already received to enable the French pig iron manufacturers to produce at an average rate of 420,000 tons per month, until the end of August. If the French production actually proceeds at this rate, the market will probably collapse altogether, for even at present buyers are holding back orders because they have no confidence on the stability of prices. Some of the French works are still inquiring in Britain for coke, and this circumstance indicates that the prospects that France will receive the full quantity of coke she needs are not so rosy as the official statement makes out. The situation is complicated by the question of the cost of the material. During the period when practically no coke was got from the Ruhr, the Continent imported large quantities from Britain and America at very high cost, and it must be from this fuel that the iron and steel which is now offered at low prices was manufactured.

The position of the iron and steel industry, therefore, is quite uncertain. So long as the buyers hold off the Continental sellers will make tempting offers, but it is very doubtful if they would care to fill their order books at the current prices. On the other hand, if the French official estimate of the condition on the Ruhr should prove correct and sufficient coke should come forward to meet the French steel makers' requirements, the prices might settle down perchance to the levels of last autumn, and the British works, which are now working from hand to mouth as far as new business is concerned, would be faced with the necessity of revising their quotations as their existing orders are worked off.

Staffordshire common bars 14s. 3d.; galvanised corrugated sheets in bundles 23s. per cwt.

Pig Iron.—Cleveland, Foundry No. 1, 130s.; No. 3, 122s. 6d.; No. 4 forge, 115s.; mottled, 110s.; hematite, mixed Nos., 122s. 6d. Finished iron and steel.—Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £9 10s.; hard, £10 10s.; bars and angles, £10; tees, £11; joists and channels, £10 5s.; sheets, singles, £14 10s.; doubles, £15; lattens, £15 15s.; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

Wire, Nails and Sheets.

Galvanised wire in 1 cwt. lots, mild steel fencing, 1 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ⅓ cwt. coils, 7 ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 21s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 24s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 21s. per cwt. Bolts and nuts, 50 per cent. discount.

Coke Shortage in Cumberland.

Shortage of coke compelled the Millom and Askham Hematite Iron Company to put all their Millom furnaces out of action on May 21. This is the third time during recent months that these works have been stopped through the difficulty of obtaining supplies.

United States.

Market Conditions.—There is a noticeable lull in new business, with an absence of premium prices for prompt shipment, which gives the market an appearance of weakness which does not really exist. Blast furnaces and mills are fully employed for three to four months ahead.

Pig Iron.—In the Youngstown district 40 out of 46 blast furnaces are active.

Steel Company Amalgamation.—The Inland Steel Company of Chicago has increased its capital from $30,000,000 to $150,000,000.

Pig Iron.—Foundry, bessemer and basic irons are slightly easier at $29 to $30 Western Pennsylvania and Buffalo, and $27 to $28 Birmingham. The high costs of production present a barrier against a serious break in prices. The price of heavy steel scrap has been steadied in Pittsburg district by the purchase of 50,000 tons at $22 per ton by a large independent steel works.

Semi-finished Material.—Large sales of sheet bars are reported from the Cleveland district for third-quarter delivery and also from Pittsburg, where $45 is quoted. For wire rods $55 to $56 is asked.

Steel.—Operations at the steel mills are rather higher and average about 93 per cent., the Steel Corporation working at 96 per cent. The total business in structural steel in April declined to 176,954 tons, compared with 216,617 tons in March. The sheet mills, wire mills and tube mills are well booked into the third quarter. The prices of plates and shapes have been shaded slightly to $2.40 to $2.50 on desirable tonnages for third-quarter delivery.

Germany.

Pig Iron Production.—The pig iron production of Germany during the past twelve months may be estimated to be no less than 7½ million tons, and is probably little [illegible] of 9 million tons. The [illegible] production of the Ruhr has very nearly approached the normal rate, and in spite of the general [illegible] of shortage of [illegible] of [illegible] from [illegible] many of the smelting works owing their own [illegible] have not been held too short. From [illegible] [illegible] results a production of about 1½ million tons, whilst [illegible] production from [illegible] [illegible] million tons. During the period January-October, Germany imported [illegible] some [illegible] tons, chiefly from Lorraine and Luxemburg, and exported in the same period 175,000 tons. The net imports for the year would, therefore, be 100,000 tons.

France.

Among Imports from the United Kingdom.—Imports of pig iron and steel (including slag) from the United Kingdom, which amounted to 50,757 tons (metric) in 1913 were 121,112 tons in 1922, as compared with 57,[illegible] tons in 1921. The production of pig iron and steel is still much below pre-war level, despite the fact that reconstruction work in the devastated industry is now practically completed and that more modern machinery has, naturally, been installed. In 1913 the production of pig iron was 5,206,000 tons, and the production of steel 4,687,000 tons. In 1922 the totals were only 5,128,000 tons of pig iron and 4,471 tons of steel, though the output of the Lorraine district is now included.

New Zealand Resuming Trade with Germany.

Finding that German goods are being imported through other countries, the New Zealand Government has announced its intention to remove on September 1 the embargo that has hitherto remained in force against German manufactures.

Holland: The New Steel Works.

The erection of the plant of the Royal Netherlands Blast Furnace and Steelworks Co. at Velsen, near Amsterdam, is making steady progress, and it is hoped, during the present year to blow in a blast furnace with a daily capacity of 220 tons of pig iron, as well as to start the first half of the coking plant. If the results are satisfactory, a second furnace will be put in hand. The electrical plant is to be driven with blast furnace gas

Second-hand Machinery.

This market last week was somewhat more brisk, but, as previously stated, on account of a scarcity of second-hand material, several orders have been placed for import which a few months ago could have been obtained on the Rand. With the Rand as a depôt for all classes of machinery and supplies to north, south, east and west, this has caused a great scarcity and all spares are practically unobtainable. There appears to be a better feeling and a little more animation in the second-hand machinery business, and dealers are looking forward to better times, which, in the opinion of most would have materialised had it not been for the present inimical political aspect of the two parties and the chances of a crash should the Nationalists predominate—which everybody is hoping will not occur

Union Steel Corporation (S.A.), Ltd.

This important local institution reports very busy conditions, full as an egg with orders and working at full pressure, with all employees on full time and at full rates.

In passing, it may be mentioned that the Vereeniging community is at the moment a very busy one, and likely, in the opinion of experts, to become even busier in the near future.

Electrical Goods.

There is nothing new to report in this section; business is and has been for weeks slow, notwithstanding the increased building operations. Dealers are, however, looking hopefully forward to better times after the half-year shall have shed, in some measure at any rate, its stringent financial obligations. Prices locally and oversea are at present much about the same.

Second-hand Iron and Timber.

Business in the second-hand iron and timber yards has not improved of late but has continued invertebrate. Prices are unaltered at 4d. for iron and 6d. for timber. Dealers complain especially of the want of ready money—and they are, unfortunately, not singular.

Union's Grain Elevators.

Minister Jagger has officially stated that the cost of these (increased unfortunately by untoward circumstances at the Durban site) will amount to £2,000,000. This sum, large as it is, should soon be recouped in future working results.

Timber and Building Materials.

A leading merchant this week said that business in the timber trade had been very fair, but not quite up to past weeks' standards. After the end of June, however, he thought financial stringency might be released and give us the show we quite expect. Business on the whole, it appears, has been good, and after the upheaval of recent months should settle down to more favourable conditions. The price of bricks remains the same. Among recent building contracts may be mentioned a three-storied building, corner of Plein and St. George's Streets—hotel. The old Gold Fields Hotel—loved by pioneers as the "Hocking" Corner—is, it is said, about to assume "Savoy" dimensions shortly.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3⅞d.; floorings, 6d. to 6¼d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d. to 9d., very firm. Furniture timber: Burmah teak, 16s to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s., at coast; Japanese oak, 11½d at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot, at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 3d. to 1s. 4d per foot of 1 x 12, here; American pine shelving, 9d. per foot, 3-ply wood, 3m.m. up to 5 m.m., alder and birch, 4d to 6½d. per sq. foot; oak and teak, 3-ply, 10d. per sq. foot. Brick Prices, etc.: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 6s.; 15 in., 7s. 6d.; 18 in., 9s.; dry red oxide, 14s. per 100 lb.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3 ply.

The Vereeniging Brick and Tile Company, Ltd., are at present fully occupied in supplying material for the Colenso Power Station, and also for supplies for the South African Railways.

Tenders Recently Accepted and Recommended by Johannesburg Town Council.

Accepted.—The Rhodesian Native Timber Concessions, for 8,000 Rhodesian teak sleepers at 13s. 11d. each., £5,566 13s. 4d.; Messrs. Henley's S.A. Telegraph Works Co., Ltd., 9 miles of specified cable at 1s. 9¾d. and 2s. 3½d. per yard, £1,553 15s.; the Telegraph Manufacturing Co. (Colonial), Ltd., 1,000 yards conc cable at 5s. 7 15-16d. per yard, £283 1s. 6d.; the Metropolitan Vickers Electrical Co., Ltd., 1,500 yards concentric cable at 5s. 9·93d. and 8s. 6·18d. per yard, £571 8s. 9d.; Henley's S.A. Telegraph Works Co., Ltd., 1,000 pairs cut-outs at 6s. per pair, £300; T. A. Lawrie, Witbank, for supply of 300 tons monthly for 12 months of gas coal at 25s. 10d. per 2,000 lb., £4,650; General Coal Agency Co., Ltd., six months' supply of gas coal at 22s. per 2,000 lb., £1,980; Cash Coal Co., six months' supply of round coal, £840; National Trading Co., Ltd., six months' supply of cotton waste at 6·9d. per lb., £644; William Hosken and Co., Ltd., wrought iron piping, £3,926; the Griffin Engineering Co., Ltd., steam roller, £1,000.

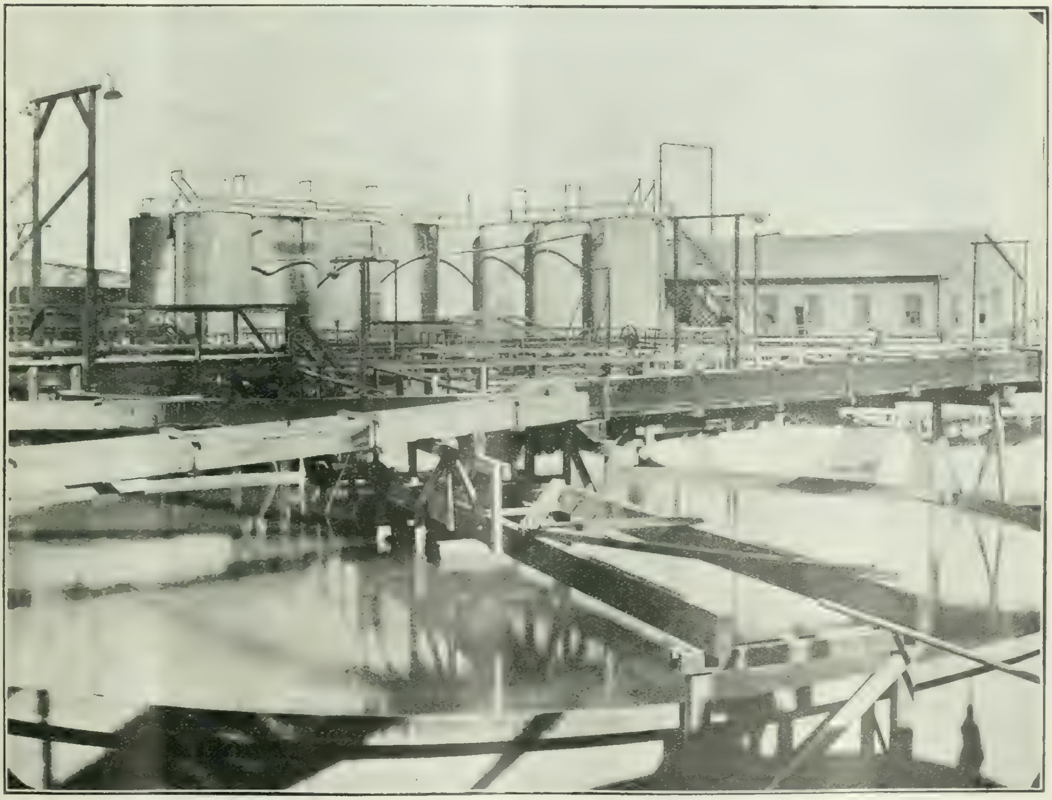
Recommended.—The Griffin Engineering Co., Ltd., 3 road rollers, £4,048; Reid Bros. (S.A.), Ltd., 1 motor lathe, £587 10s.; the Griffin Engineering Co., Ltd., air compressor and accessories, £1,200; Bartle and Co., Ltd., 100 special meter boxes, £387 10s.

**Native Labour Shortage—Diamond Industry Improving—
Natal Navigation's New Plant—More About Cotton—
Engineering and Industrial Features.**

Industries The South African Commerce
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Finance Established 1891. Transport

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JULY 7, 1923 No. 1658

A Modern Rand Cyanide Plant.



The extended cyanide equipment of the Geduld Proprietary Mines on the Far East Rand.

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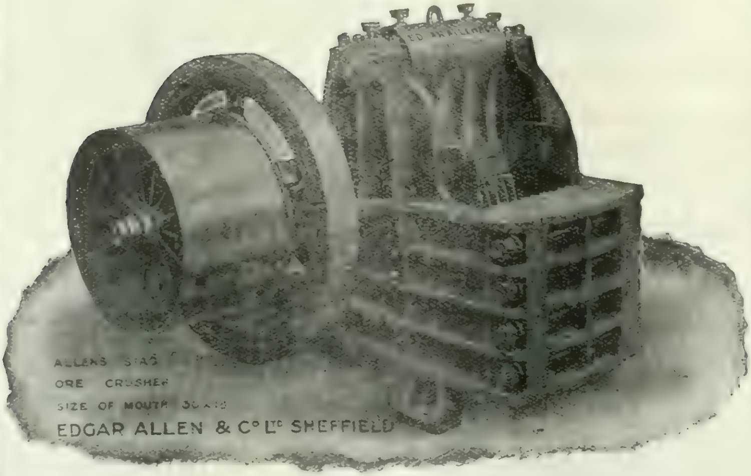
use every inch of jaw surface



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Native Labour Shortage.

RAND GOLD MINES SHOW SHORTAGE OF 10.000 BGYS—COLONEL PRITCHARD TO REPORT—REQUIREMENTS OF AGRICULTURISTS AND OTHER MINES AND INDUSTRIES.

As was generally anticipated a few months ago, when the curtailment of recruiting operations in Mozambique was brought into force, the result of these restrictions has speedily become evident in the form of labour shortage, which appears to be rapidly becoming acute and which is not only affecting operations on the Witwatersrand, but throughout South Africa generally.

Briefly stated, the essential facts of the situation are that during the past four months there has been a serious and successive decrease in the native labour forces employed by gold mines on the Rand, and by comparison with the end of February there was a shortage at the end of June of approximately 10,000 natives. Several of the mines are in dire need of more native labourers, and their operations and ability to afford work to white men are being thereby curtailed. Not only is this shortage of native labour evident on the Witwatersrand, but it is also the case in Natal, where the collieries and sugar and cotton planters and other industrial concerns require more boys and are unable to get them. Farmers in various parts of the country, too, are having to restrict their agricultural operations because of the shortage of coloured farm hands, and unless more native labour is available it seems probable that the shortage in the country districts will become accentuated. The only solution of the difficulty seems to be to import more natives from Portuguese East Africa, because it is becoming increasingly evident that the supply of Union boys is not sufficient to go round

EUROPEAN AND COLOURED LABOURERS ON THE REEF.

A typical scene on the Far East Rand: a shift at Brakpan No. 3 Shaft head.

Colonel Pritchard to Report.

It is understood that a report dealing with the whole question of native labour supplies for the mines and other industries of the Union will be issued shortly. Colonel Pritchard has recently been conducting investigations into supplies of labourers and conditions generally in the native territories, and his findings are awaited with very considerable interest.

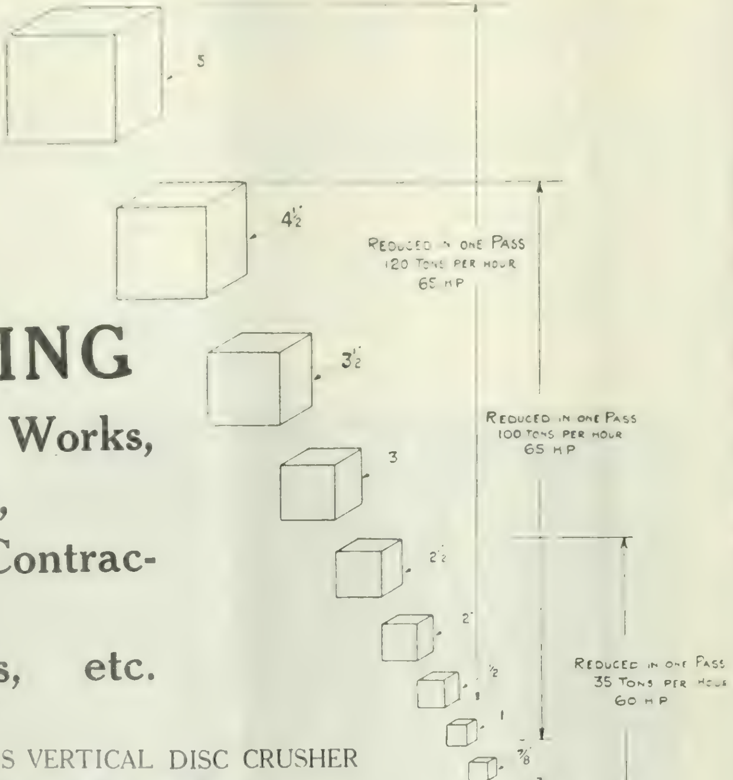
Increasing Requirements of Diamond, Copper and Tin Mines.

It should not be lost sight of that, quite apart from the requirements of the gold mines and agriculturists and the quotas wanted by railways and harbours and municipalities for constructional operations, as well as ordinary routine work, the demands of the diamond and copper and other mines are expanding. A year ago, for example—i.e., in May, 1922—the diamond mines of the Union were employing 3,306 coloured persons, whilst in May of this year the number was 9,579. In regard to copper mines, the number of native employees has increased from 615 to 2,360 in the past twelve months. The tin mines have almost doubled their complement of coloured workers during the same period.

Unemployment Aggravated.

The truth of the whole matter is rapidly becoming evident, and in plain English it merely amounts to this: that there is insufficient coloured labour available in the Union to satisfy all the Union's industries, and that, in consequence, industry is being hampered, and the real solution of the unemployment problem in so far as European out-of works are concerned is not only being postponed, but, in point of fact, the position is becoming aggravated by the restriction of recruiting operations in Portuguese territory

CAPACITY OF SYMONS DISC CRUSHER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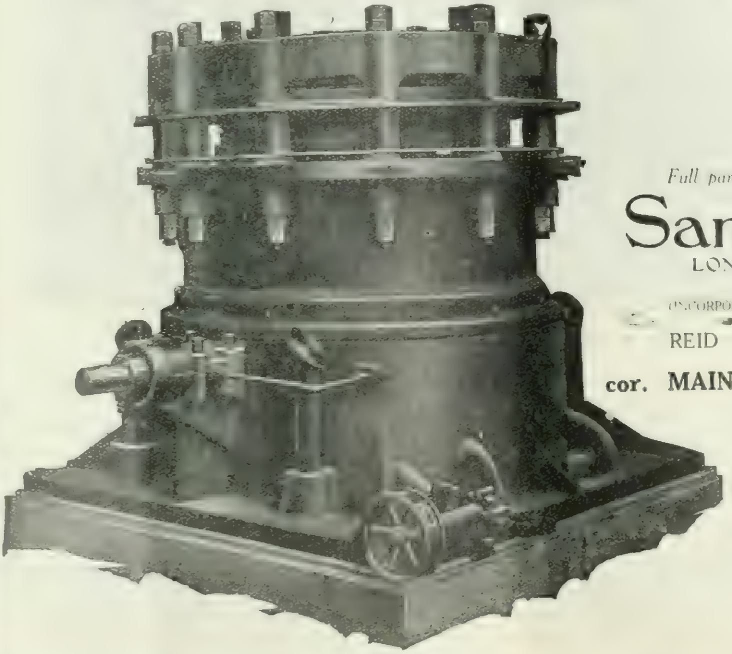

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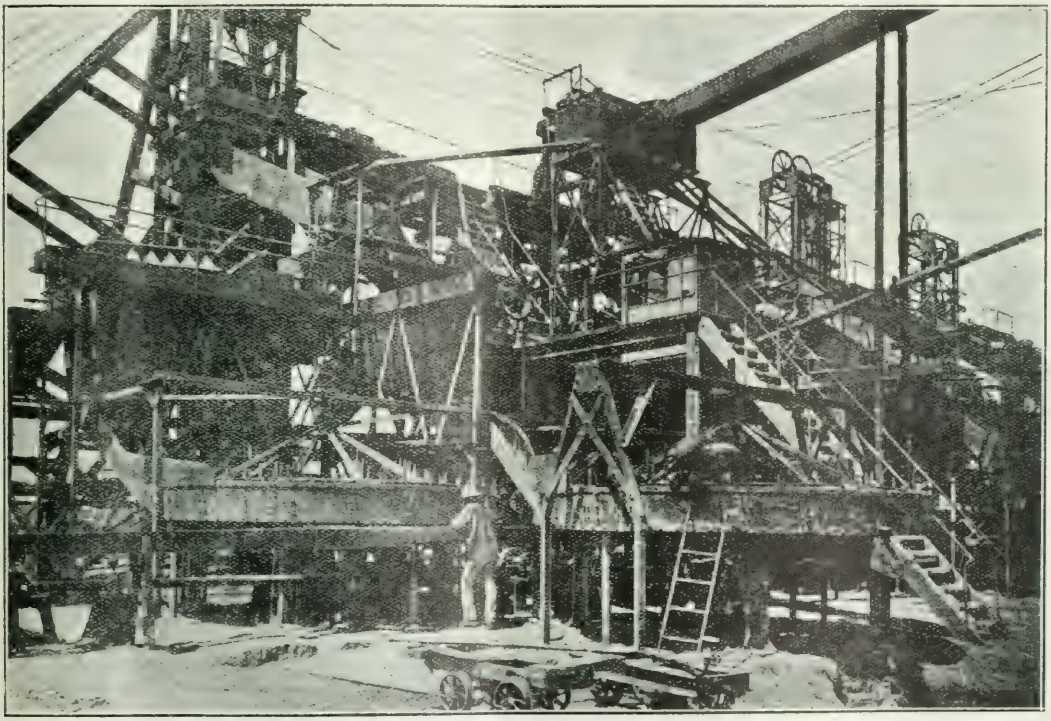
Union's Diamond Production Improving.

SOME VALUABLE COMPARATIVE FIGURES—INCREASED RETURNS—AND EMPLOYMENT—FIVE MONTHS' OUTPUT 567,162 CARATS—SIR DAVID HARRIS OPTIMISTIC NEW ELAND'S OUTPUT—POSITION AT CROWN DIAMONDS.

For the five months ended with May of this year, the diamond production of the Union was 567,126·5 metric carats, of a value of £1,802,731, as compared with 288,020 carats, valued at just under a million sterling, in respect of the six months ended with June of last year. In the Union of South Africa the total production of diamonds for last year was 669,559 carats of a value of £2,266,631. It will be seen, therefore, that the output of diamonds for the first five months of the current year represents a substantial proportion of the total production for the whole of last year.



A South African Diamond Washing Plant.

Average Monthly Outputs.

In other words, the production may be expressed in the form of monthly averages, as under:—

Average per month.	carats.	Value. £
1922	55,797	188.052
First five months of 1923	111,425	360,547

It will be clear from this, then, that the average monthly output of precious stones in South Africa during the first five months of the current year has been double what the average monthly production was in 1922, roughly speaking, both in respect of weight and value.

It is also interesting to observe the increase in the number of employees of the diamond mines, both producing and non-producing, during recent months. Thus, a year ago—in May, 1922 1,749 whites and 3,306 coloured employees were on the books of the diamond mines, and in May, 1923, this number had increased to 2,650 whites and 9,579 coloured. The figures in respect of native employees are decidedly interesting, and the increased number of coloured employees at work is, no doubt, in some degree responsible for the shortage of native labour in other industries. That the outlook in the diamond market is better, despite rumours of more Bolshevist jewels being thrown on the market, seems indisputable, and in support of the view that the position of this branch of the mineral industry in South Africa is improving, one may refer to the optimistic speech made by Sir David Harris at the meeting of the New Jagersfontein Company, held the other day.

Jagersfontein's Much Improved Sales.

In the course of his speech, Sir David stated: During the year ended the 31st March, 1922, our total sales of diamonds amounted to £18,498 6s. only. During this period our expenditure totalled £129,955 4s. 11d., depleting the cash reserve by over £110,000, a very trying time for the directors, who felt that if the expenditure was further decreased more unemployment and distress would follow, and this we were most anxious to avoid. During the year under review the sales of diamonds amounted to £455,756 9s. 11d. The vast difference in the sales of diamonds in the company's financial years 1922-23 bear sad but eloquent testimony to the great depression that prevailed, and the urgent necessity for husbanding our cash resources, not knowing how the tide would turn in our favour. The diamond market, which was in a very depressed state for nearly two years, showed signs of gradual revival in July last, exhibiting further improvement towards the end of the year, and which has been maintained up to now. The total sales to date are below the average of the last half of the year 1919, and the first six months of 1920. We cannot expect average sales until the disrupted state of Europe assumes normal conditions. It is difficult to say when this incredible state of affairs, which has entirely upset the economic conditions of the world, will materially alter, but until it does we cannot work our mine to the extent we did before the war. From a cold-blooded business point of view it would have been advisable to have stopped all work, but to prevent increased unemployment we carried on restricted operations during the whole of the slump, which not only drew heavily on our cash reserves, but prevented the declaration of a dividend at the end of March, 1921. For two whole years shareholders did not receive a dividend, but in September, 1922, and in March last, we were able to renew the payment of dividends, amounting together to 6s., and shareholders may confidently anticipate another dividend for the half year ending the 30th of September next.

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Other Favourable Factors.

Attention may also be directed to the fact that the New Eland Diamond Company has resumed production on a substantial scale. The output of this company for June has just been announced at 3,732 carats from 14,202 loads washed.

Another important concern which will, in the near future be declaring outputs, is the Crown Diamond Company. This concern has now virtually completed construction of a new treatment and washing plant of most up-to-date design, and it is expected that the installation will come into commission in the middle of this month. Taking everything into account, the prospects of the diamond industry may at least be regarded as distinctly encouraging, and it may be looked upon as a moral certainty that the mineral output of South Africa for the current year will be substantially augmented by reason of the better times that now exist for the diamond market.

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining Rand Mines group for the month of June, 1923:—

Company.	Tons Crushed	Yield in Fine Gold oz	Estimated Value.	Estimated Profit.	Estimated Working Cost per ton.	
City Deep ...	90,000	37,868	£164,726	£55,226	24	1
Con. Main R:	42,000	14,462	62,911	3,367	31	6
Crown Mines .	216,000	68,484	297,912	83,157	19	10
Dur. Rood Dp	31,300	10,591	46,090	5,054	26	2
E.R.P.M. ...	130,000	31,400	136,588	1,959	20	8
Ferreira Deep .	31,500	8,685	37,780	6,013	20	2
Geldenhuis Dp.	59,800	14,257	61,899	1,719	20	1
Knight Central	27,700	5,622	24,455	1,743	16	4
Modder B. ...	63,000	31,266	136,007	72,178	20	3
Modder East ..	27,000	12,322	53,344	19,175	25	3
New Modder ..	116,000	53,902	234,186	140,566	16	1
Nourse Mines .	46,300	14,712	63,905	7,263	24	5
Robinson	12,500	3,804	16,458	4,105	19	9
Rose Deep ..	55,400	13,088	56,782	10,502	16	8
Wolhuter... ...	33,600	7,802	33,869	3,080	18	3
Village Deep .	54,700	16,904	73,533	11,208	22	9
Tls. & avgs	1,036,800	345,169	1,500,445	419,581	20	10

*Loss.

Consolidated Main Reef Mines and Estate, Ltd.—Accident to winding engine already reported is responsible for loss of tonnage and profit. Repairs have been effected and operations are now normal.

East Rand Proprietary Mines, Ltd.—The increased profit is due almost entirely to the higher price of gold, which has been taken at £4 9s. per fine ounce, less 2s. for exchange and realisation charges, a net increase of 1s. per fine ounce, compared with the previous month. The above figure of £1,959 represents the working profit, no allowance having been made for debenture interest and redemption, which amounts to approximately £9,600 per month.

General Note.—The valuation of gold has been taken at £4 9s. per fine ounce, less 2s. for exchange and realisation charges. The results generally have been affected by shortage of native labour.

Natal Navigation Collieries.

NEW EQUIPMENT FOR NOS. 4 AND 5 PITS APPROACHING COMPLETION—CAPACITY OF OVER 2,000 TONS PER DAY—AN EFFICIENT AND MODERN INSTALLATION.

A representative of the "S.A. Mining and Engineering Journal" visited the new pits of the Natal Navigation Collieries the other day and found the splendid installation, which is being erected there, approaching completion. The following note gives a few brief particulars of this commendable enterprise, which has been undertaken at substantial cost by the progressive Natal Navigation group; and at a later date the "Mining Journal" will deal with the Natal Navigation's new plant and outlook at greater length.

The new pits of the Natal Navigation Company, known as Nos. 4 and 5 respectively, lie about four miles to the east of the general office and old workings and have been sunk in a basin of high-grade coal of immense area, containing a tonnage sufficiently big to ensure very large output from these pits for a great number of years to come.

The coal at both pits is attacked by means of inclined main roads connected up by means of endless rope haulage with a central plant, which is designed to handle the product from the two pits. This new area, therefore, in point of fact, combines two collieries in one, and the plant has been laid out on the most modern and efficient lines, with an output of over 2,000 tons per working day.

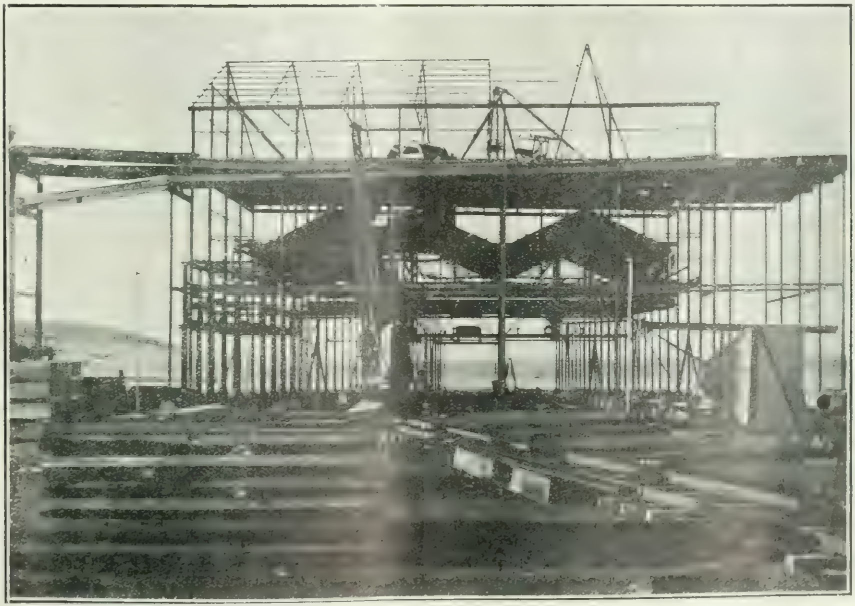
At the present time, less than half this output is being secured from this new section of the Navigation, as the plant has not yet been quite completed; and, obviously, production must in a large degree be determined by orders, labour and truck supply, etc., etc.,

The new equipment has been laid out with a view to the uninterrupted supply of a maximum tonnage, with a minimum of labour handling. The greater part of the equipment, both at surface and underground, will be electrically operated, and this portion of the installation, which has been erected under the supervision of Messrs. G. M. Clark and Partner, the Consulting Engineers, calls for special commendation. Nine Babcock and Wilcox boilers have already been installed and four more are to be added. The boiler house had not been bricked in at the time of our representative's visit a week or two ago, but this work will be completed in the near future.

In about two months' time, as a matter of fact, the whole installation will be finished, and in its completed form it will certainly constitute one of the finest equipments of its kind in this or any other country.

E.R.P.M. in June.

Results shown by the East Rand Proprietary Mines in the returns of the June operations are: Tons crushed, 130,000 tons; yield in fine gold, 31,400 ounces; value, £136,588; profit, £1,959; working costs per ton, 20s. 8·5d. The increased profit is due almost entirely to the higher price of gold which has been taken at £4 9s. per fine ounce, less 2s. for exchange and realisation charges, a net increase of 1s. per fine ounce compared with the previous month. The above figure of £1,959 represents the working profit, no allowance having been made for debenture interest and redemption, which amounts to approximately £9,600 per month. In May the profit was £76, and in April a loss of £3,071.



Constructional work at Navigation's new plant: an engineering study. Photo taken a few months ago. The plant is now nearly completed.

The Sixth International Mining Exhibition.

LONDON'S DISPLAY OF MINERALS, MACHINERY AND METHODS—SAFETY FIRST ASPECTS—COAL-CUTTERS AND CEMENTATION.

(From our Special Correspondent.)

(Second Notice.)

London, June 15.

There is much of interest to South Africans and indeed to all mining men in this excellent exhibition. Strange to relate, the daily press has had very little to say about it, but the technical press has made ample amends. Of course it is an exhibition meant primarily for specialists, and of such there appears to be a goodly number, for on the five occasions I have been present there were plenty of interested visitors. Practically all the space of the Royal Agricultural Hall has been taken up and the principal suppliers of mining machinery and material are all represented. What I call "general engineering firms" are also fairly strong. Of them I say nothing as they are to be found at every engineering exhibition. I mean by this the makers of boilers, economisers, pumps, etc.

The most noteworthy feature of the exhibition is its international aspect. True, Great Britain is not officially represented, but the Mines Department Experimental Station has a most interesting stall, as has also the "Safety in Mines Research Board." The U.S.A. exhibit at the time of writing is peacefully reposing in some unknown British port, but Mr. George G. Rice, of the Mines Bureau, an eminent man in his own line of work and a charming one to boot, ably holds the fort for his country. France, Belgium, the Belgian Congo, Nigeria, Mexico and Colombia are all well represented—some officially and others semi-officially—but the Colombia stall is probably the most spectacular of the lot for the wonderful display of minerals, particularly of emeralds in their native state, is a great draw. In this connection also I must not forget the platinum display, particularly the big nuggets of placer origin. It is not generally known that Colombia is now gradually taking the place of Russia as a producer of this very valuable metal.

Of the official receptions I shall say nothing, interesting as they have been, but the conferences which have been running all the time have been most informative. The Institution of Petroleum Technologists have just completed a most valuable series of conferences, but they have no special significance for South Africa. The purely mining lectures have been excellent.

The Katanga Exhibit.

For instance, M. E. Sengier, of the Union Minièrè, in his lecture made public many facts about that wonderful concern which one only heard whispered before. It has been reported fully in many of the financial and technical papers and as it has already appeared in at least one of the London South African journals, I need not repeat it. The lecture, however, should be read in conjunction with the very fine exhibit which the Union Minièrè has sent. The plans and photographs give one a fairly clear idea of the magnitude of the operations conducted at these wonderful mines and it is perfectly evident from them that American mass production methods are very much to the fore. However, these have all been dealt with already in your Journal.

It is, of course, absolutely impossible to make more than a brief reference to the exhibits, and in the notes which follow I have deliberately chosen items of interest to South African readers. I should also state at this stage that most of the plant and machinery shown is designed for coal mining.

Safety Lamps.

Safety lamps, so far as I remember, are not used in any of the Transvaal collieries, and in most of the Natal ones their use is not obligatory. The ordinary flame lamp in this country is gradually being displaced by the "electric lamp," as it gives a better light. It cannot, however, indicate the presence of gas, so that the "deputy" foreman, or shot firer must always carry a flame "safety" lamp to test for fire damp. There is a battle royal going on between the different makers, as a result of which there are many excellent lamps on the market, and they make a fine display in this exhibition. To my mind the so-called "Alkaline" lamp made by Alkaline Miners' Lamp Co., Stratford, London, is the best and most reliable of the lot. For this statement I have many reasons. The first cost is nearly double that of the others, but the electrolyte of the accumulator is alkaline which means a lot. The makers say that the upkeep, which is a big item in a colliery which may have over 1,000 in use, is only a fraction of that of the others.

Coal-Cutters.

The International Channelling Machines Co. show the "Siscol" scalloping machine, which is no doubt used in the gassy mines of Natal, though I have no knowledge that this is so. It is in reality a coal cutter of the percussive type, fitted with an attachment for breaking down the coal after it has been undercut, as it does away with the use of explosives. It may surprise some to know that in some of the English collieries there is no shot firing at all beyond the usual "brushing" or "ripping" which must be done to clear the roads. In one very large colliery no shot firing in coal is permitted at all except by a resolution of the board.

As in every branch of applied engineering, a battle royal is proceeding all the time on the relative merits of coal cutters. All the principal protagonists in the battle are on exhibition, and it would be very wrong of me to assess the relative merits. The truth is that each one has its special advantages and disadvantages. Some are more suitable for thick than for thin seams, and others again are limited in their applications through the presence or absence of compressed air or electricity.

Cementation.

Probably the work done by the Francois Cementation Company, Ltd., in South Africa, both in Rhodesia and the Transvaal, is the best advertisement it ever had. It made slow progress in England even under the management of one of Johannesburg's most capable young men, Major Standish Ball, who is now in Trinidad. Much water has flown under the bridges since those days, and it is now pretty well known that many pits have been saved through cementation both in France and in Belgium. The exhibit of the company is not spectacular. It wants studying, and such studying is worth while, for some remarkable results are given. It may be stated, however, that cementation has not got beyond the controversial stage in this country. The model shaft section shown clearly indicates the method of erecting the ferro-concrete lining now used for water-bearing ground.

Oil Shale Plants.

Both in England and in South Africa we have heard much of late about oil shales and the relative merits of certain plants for treating these shales. The Fusion Corporation of Middlewich have felt strong enough to exhibit a large model of their plant. I have, however, seen it operating on a large scale, and to my mind it has a great future, more particularly as it has already done well with South African shales. The retort consists in the main of a steel cylinder not unlike a tube mill. It is externally heated and the temperature is easily regulated. While it revolves slowly the shale is prevented from caking by a very simple falling weight device which at the same time exposes new surfaces to the heat. This in turn prevents local over-heating. There has always been great difficulty in making a gas-tight gland for a rotating cylinder of this description, but the difficulty has been overcome by a very simple arrangement.

The Butterley Company of Nottingham have on exhibition a large working model of their Rheolaveur coal-washing machine. Washing machines are greatly used in this country and on the Continent, and South Africa will have to follow suit sooner or later. The principle embodied in this machine is that of a tandem spitzlute, and the separation of the shale from the coal is clean and efficient.

Wave Transmission Rock-Drills.

Two years ago W. H. Dorman and Co., of Stafford, startled the mining world with their wave transmission rock-drills. They did most spectacular work at an exhibition held in London about 2½ years ago, but at the time I doubted whether they could stand up against the rough and tumble conditions of underground mining. Experience has shown that in their present state of development they cannot do so, so they are now limited to surface work such as quarrying, railway cuttings, etc. For these purposes they have designed portable 3-drill installations which can be taken anywhere provided the wheels can get a grip, so we may see them in some of our diamond mines yet. The drills could only be used in conjunction with the rightly renowned "Flexatel" steel tubing, which can be bent to any angle. This has developed far more rapidly than the drill, and is now used for steam, air, water and oil under great or little pressure.

A Ferro-Concrete Headgear.

Though I have seen many collieries within the last few years, I have not yet struck one with a ferro-concrete headgear, and yet I know that they exist. Not only so, but they have been in service for years and have apparently given every satisfaction. In some of the properties now being developed not only the headgears, but all the buildings, including the washeries, which are subject to considerable vibration, are built throughout of ferro-concrete. Johnson's Reinforced Concrete Engineering Co., of Manchester, appears to be foremost in this line of work, and at the moment they are designing reinforced headgears for something like seventy collieries. It was permitted to view the plans of one which had been at work for three years. It was 70 ft. high and the legs were only tied at the bottom, middle and top. The effect was rather startling, but it is successful. The reinforcing steel for the legs is made up at the factory, and it consists of a square frame of mild steel tubes tied together by steel wires which cannot shift from their position.

The Cornish Exhibit.

Cornwall has an independant and highly creditable exhibit, and it is not surprising to find Climax and Holman drills in close proximity. There is also an excellent display of the principal minerals found in the Duchy, and the dressing of tin and wolfram ores is indicated diagrammatically and by the products at the various stages. In fact every phase of Cornish mining is shown, including granite and china clay, which latter has got back to its pre-war importance and shows every indication of expanding.

I can only comment very briefly on the large and important section which deals with research and safety in coal mines. It is encouraging in this connection to note that three of our Universities have very ambitious and most instructive displays, viz., Sheffield, Durham and the Royal School of Mines. Every kind of apparatus for analysing gases, oils and coal products is shown, as are also scientific instruments for testing inflammability of gases and dust. A most interesting item was the air pump used by Henry Bessemer when he carried out his historical experiments.

Safety First.

The "Safety in Mines Research Board" would require an article by itself. It is excellent in every way and shows diagrammatically, photographically and by actual demonstration the very latest results and how they were obtained. For instance, it has long been suspected that a spark from a pick on iron or steel or hard rock might cause ignition of fire damp. Professor Wheeler has shown that this is not so, owing to what is called the "lag" [illegible]. In other words, before fire damp can be ignited there must be a steady source of heat [illegible] at least for a measurable period of time. Now a spark is only momentarily brought to the incandescent stage for a very brief period, and even during this period it is cooling. Sparks on a pick, therefore, cannot ignite fire damp, and this is illustrated several times a day by actual experiment. In this same section Nobels Industries exhibit a wonderful set of photographs of the flames produced by safety explosives, and, in one case, that of the explosive Samsonite No. 3, no flame is produced at all.

I think it rather a pity that South Africa is not represented at all, but most people know that at next year's Imperial Exhibition the Chamber of Mines is going to do something very fine. When on the subject of South Africa, it need hardly be mentioned that many of our well-known mining men have visited the exhibition, and, in a sense, it has been something of a reunion.

W. G. [illegible]

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An interim dividend of 2½ per cent has been declared by the Dundee Coal Company for the half year ending 30th June, 1923, payable to all shareholders registered in the books of the company on the 4th July, 1923.

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Research and Gold Mining.

A PLEA BY THE OUTGOING PRESIDENT OF THE SOUTH AFRICAN INSTITUTION OF ENGINEERS FOR THE STUD YOF MINING PROBLEMS.

In the course of his valedictory address to the S.A. Institution of Engineers, Mr. J. W. [illegible], the outgoing President, made the following [illegible] plea for research in gold mining:

"I am of the opinion," he said, "that much true economy is attainable as the result of research work in connection with gold mining. Economy may be of either of two kinds. First, by way of cutting down expenditure on wages and stores. But to cut wages is very apt to cause expensive strikes, while although carefully to sort over the scrap pile may produce very desirable savings, the effects of such efforts are strictly limited and if carried to extremes, may easily result in decreased, instead of increased net earnings. Anyone can make a cut in salaries and wages, or discharge a part of his staff, with the apparent result of saving just what he calculated on; to do so requires no skill, though it may take hard-hearted courage, and at the best its result is strictly limited. The risks of such economies are not calculable, since they involve the unknown human factor. Anyone can use up scrap tools or materials, instead of buying new, and think himself the richer by the amount of his diminished stores account, but it is very difficult to guess the real saving resulting from such a course, because of the difficulty of forecasting the life and maintenance of damaged materials.

Constructive Economy.

"The second kind of economy might be called 'Constructive Economy,' which is the expenditure of thought and money on new machines, new methods, and new processes, with the hope that labour may be dispensed with and production increased. The results of such economy are incalculable and, also, almost unlimited. It is to the engineer and the inventor that the capitalist must look for a lead in this direction. But the engineer is usually handicapped by his daily grind of duties and by lack of financial and other facilities for his investigations. He is often handicapped, also, by having to work out his ideas alone. It is generally true that two in collaboration are more effective than three working separately; Nature's scheme of biology seems to run true, even as to intellectual effort.

"Considering only the gold mines, and especially those of which the policy is to a certain extent laid down by the Chamber of Mines, it seems to me desirable that greater collective effort should be made to study the problems which are largely common to all. I am aware that a good deal is already done in this direction, but I suggest that it would be desirable to have men as directors of research, with responsible staffs and assistants, whose whole time should be given to small-scale experiments. I suggest that one should be a mining engineer, another a metallurgist, and a third a mechanical and electrical engineer.

Being too far away to be shied at, and happy in the knowledge that a presidential address is privileged, I suggest a few problems which might be tackled first:

Metallurgical Research.

By the Director of Metallurgical Research: Oil flotation of concentrates and the proper preparation of the latter for that treatment: Collection and recovery of gold from refinery flues, perhaps by the Cottrell process: Recovery and utilisation of zinc, now wasted: Timber preservation underground: Drill heating and sharpening underground. (Note.—On this subject I feel convinced that no real progress is to be expected except from research on the mines. For years the mines have waited patiently and anxiously for some electrical firm to come along with a suitable furnace which it would offer under guarantee or at least at its own risk. The problem on the Witwatersrand is so unique and so urgent that further delay is to be deplored.)

Mining.

"The Research Mining Engineer might study once more and on a more definite programme: Rock breaking in connection with various grades of explosives: Improvements in detonation of explosives for prevention of misfires: Ventilation during development work: Analysis of costs of haulage by various methods underground: Effect on costs of improved illumination of working faces. Those of you who are more fully informed as to underground work could doubtless also suggest a dozen lines on which miniature investigation in a laboratory could be carried out, apart from the full-scale experiments and studies which I have mentioned.

Mechanical and Electrical.

"The function of the Director of Mechanical and Electrical Research would naturally be two-fold. He, with his assistants, would be called upon to devise experimental machines and apparatus to test theories suggested by the other two directors, and it would also be within his province to test the stores commonly used, with a view to improvement of quality and cheapening of cost: to try out new devices put on the market from time to time, and to suggest cures for recognised defects in standard stores and appliances. The possibilities of radio communication underground are worth investigation! All of us who have lived for any time in the Witwatersrand have looked with profound admiration on the equipment and accomplishment of the Bureau of Medical Research—so generously endowed and supported. That institution has done noteworthy work for safeguarding the human machine, and its success is a strong argument in support of the value of research in general. Without research work so-called 'quantity production' is practically impossible. It is to the full development of the methods of quantity production that lower mining costs will be due."

GOVERNMENT NOTICE No. 1099 of 1923.

NOTICE IS HEREBY GIVEN that, under Regulation No. 101 (5) (b) of the Regulations issued under the Mines and Works Act, No. 12 of 1911, I hereby prohibit the use of the under-mentioned Machine Drills in Mines scheduled under Section *two* of Act No. 40 of 1919, namely:—

(a) The short-piston Leyner Drill, in all development work except shafts and winzes, after the tenth day of March, 1924.

(b) The model 21 Waugh Turbro Drill (Standard), in all classes of work, after the tenth day of January, 1924.

R. N. KOTZÉ,
Government Mining Engineer.

Johannesburg,
27th June, 1923.

INDUSTRIAL SECTION

Natal's Cotton Industry.

(By Our Special Commissioner.) (Continued from last week.)

MORE ABOUT CANDOVER ESTATES—THIS YEAR'S AND NEXT YEAR'S PRODUCTION—YIELDS PER ACRE AND COTTON PRICES—VARIOUS NEW COMPANIES AT WORK—PROSPECT OF ILLIMITABLE EXPANSION.

In our last issue we dealt at some length with the general aspect of the Eastern Natal cotton industry, and we then indicated what tremendous prospects there are before this branch of agricultural activity in Natal. We then showed how Mr. Rouillard's persevering efforts and foresight had, in the face of well nigh insuperable difficulties, triumphed in the case of the Candover Estates, and we promised to give some further particulars of this and of other companies and individuals engaged on the cultivation of cotton in and around the country lying between the Umkusi and Pongola Rivers.

The Candover Estates Company owns in all 32,000 acres, of which 13,000 acres are arable. In addition the company has several farms on long lease. The area now bearing is 2,500 acres in respect of cotton and 800 acres for maize. The average yield of seed cotton per acre works out at about 800 lb., and it would have been much higher but for late planting. It is expected that next year's yield will be 900 to 1,000 lb. to the acre. From some sections as much as 1,500 lb. per acre have been obtained. The acreage under cotton next year will probably be 5,875, and if cotton prices are maintained and sufficient native labour can be obtained, it is not unlikely that the 1925 acreage at Candover will be in the neighbourhood of 10,000.

The Mogut Hotel and Stores.

An Inspiring Sight.

It is a wonderful and inspiring sight to stand on the edge of the Mogut Plateau and to look over all this vast acreage which was mere low veld four years ago, and is now flecked with cotton bolls or maize. You may drive along the main road through the Borgund lands and past the ginnery where two saw gins are now working at full pressure and other gins are about to be installed along a cotton growing belt three miles long. Above you is the Mogut Hill, and just below its ridge are the Mogut Hotel and well-equipped stores, another indication of progressiveness in this wonderful portion of Natal incognita. You may go on for miles and miles to another Candover property named Wilhelmsholme, formerly the farm of the late General Louis Botha, and see more acreages of cotton and gangs of native labourers busy stumping or clearing the ground for this year's planting and next year's harvest. It is a fascinating country, and the more one sees of it the more the witchery of it gets into one's blood and the more does one become impressed with its enormous productive possibilities.

1.500 lbs. of cotton to the acre! A scene on Bedrog, one of the Candover Estates properties.

What other Concerns are Doing.

Whilst the Candover Estates, Ltd., is the leading concern in this area and has blazed the pioneer trail through the cotton country, it should not be overlooked that other concerns are now forging ahead with the cultivation of cotton in the Natal "low veld" areas and are preparing for the production of very large quantities of cotton in the near future. Two of these undertakings are producing this season, and [illegible] acreages are now being, or are about to be, stumped and cleared with a view to the growth of lint and seed early next year.

Attention may first of all be directed to the activities of the Mogut Estates and the Pongola Poort Estates. The first-named company has a total holding of approximately 40,000 acres, and in round figures 14,000 acres are reckoned to be arable. 600 acres are now under cotton and 100 acres under other crops, and the cotton acreage next year will be in the neighbourhood of 2,000 acres, whilst that for 1925 will be in the neighbourhood of 4,000.

The lands of this company lie between Mogut and the Rosemaal. Beyond the Rosemaal is the outlying farm of the Candover Estates Company, known as Bethel, which has this year produced a most excellent crop, and between Bethel and the Pongola River are the cotton fields of a company [illegible] the Pongola Poort Estates, in which Mr. A. R. Rouillard, Dr. Kennedy, of Vryheid, and the Hon. Maurice Martin, of Mauritius, are interested.

Getting the cotton picking habit into the young African mind. A native woman picking cotton on the Candover Estates. Note the piccanin slung on her back.

The Pongola Poort Estates Company is this year reaping about 600 bales (each of 500 lb.) of cotton seed, and it is expected that next year 1,200 bales will be obtained, and that the year after the production will be 2,000 bales. Along the foot of the Lebombo range Hull, Blythe & Co. (closely identified with the Union-Castle Mail and Steamship Co.) have acquired 10,000 acres, nearly all of which is arable. The company formed to acquire and operate these lands is known as the Lebombo Estates, Ltd., and it is expected that next year 1,300 bales will be obtained from these estates and that the 1925 crop will be in the neighbourhood of 3,000 bales. In this neighbourhood, too, Evans, [illegible] & Co. have acquired 12,000 acres and expect a substantial output next year.

On the Transvaal side of the Pongola River Muller & Co., representing important Holland shipping interests, have acquired a very large area, said to be in the neighbourhood of 22,000 acres. It is understood that this company, although it planted late, will have a production this year of between 500 and 600 bales, and will greatly increase its production during the next year or two.

Working westwards again, nearer Mogut and between Mogut and the Rosemaal, we find Mr. P. A. Rouillard with 10,000 acres of arable land, of which 300 acres are bearing cotton. This year's output will be about 500 bales; next year's output 1,000 bales, and the 1925 crop double as much. Then, too, there is a new concern backed by English capital and known as the Kingholm Cotton Estates, which has acquired 12,000 acres, of which 6,000 acres are arable. Operations are now being commenced at these properties, and it is expected to obtain a crop of 600 bales next year and 2,000 bales the year after.

In addition to all these cotton producers there are numerous other organisations which are either reaping cotton or are preparing the ground or else are contemplating cotton production in the near future. From the farm Langverwacht, for example, Mr. Jansen, the Nationalist member for Vryheid, and some friends at the Cape, hope to reap a fair crop next season. Prospect and Zeekoepan may also be bearing next year, and this season a small harvest is being obtained from Uitgevollen and Welkom. No wonder that land is appreciating rapidly in value in this favoured area, and that its possibilities are engaging the attention of people far removed from its immediate surroundings.

Transporting maize on the Candover Estates.

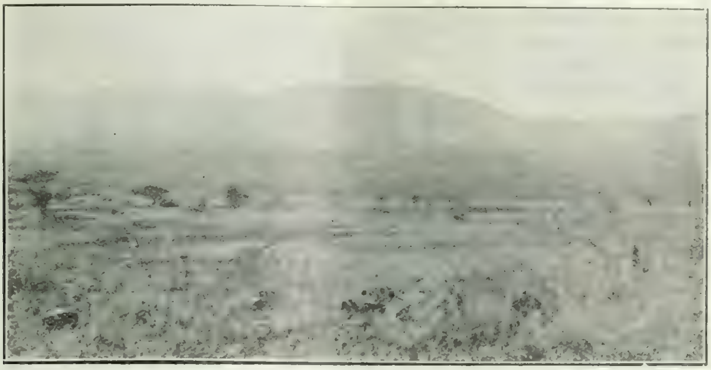
Cotton Prices and Transport.

In connection with sales it may be remarked that cotton has recently advanced a further penny half-penny per pound, and the prices realised for Natal cotton are 20 per cent. higher than American. The Candover Estates Company is now preparing to erect six more gins and is experimenting with a new type of tractor (the Cleetrac) and with Yorkshire steam wagon transport. At the present time there are 37 donkey wagons continuously on the road transporting cotton to Boomlaager Station, which is 62 miles from Mogut and 100 miles from Pongola Poort. The industry is, in fact, progressing by leaps and bounds depite the absence of a railway, which constitutes a big difficulty, and despite Government and Provincial apathy in regard to roads, telephones, police and a real labour policy, all of which are much criticised. It is understood that the Government intend continuing the Somkele line northwards to Chaneni Hill and that this line will eventually extend along the west side of the Lebombo range to Komati Poort along the most fertile valley in the Union, 200 miles long, and in which the Government own two million acres of Crown lands, mostly arable, well watered, and with tremendous possibilities for cotton growing and irrigation.

It is considered quite likely that within three years South Africa may be spinning cotton grown in South Africa, with looms at Durban, and that nothing else in the Union presents such possibilities of expansion as the cotton industry, which may largely solve the unemployment problem and enormously increase Government revenue. The cotton production of the Natal low veld and adjacent areas in the Eastern Transvaal and Swaziland may indeed in the next few years expand to 20 millions sterling or even more provided that cotton prices are maintained and that the Government adopts a helpful forward policy, particularly as regards transport and native labour and the development of Crown lands.

It is confidently expected that next year will witness a big expansion of the Natal cotton industry, and it is estimated that 300 donkey wagons and 10,000 natives will be required for the production and transportation of the crop, whilst thereafter output may expand until eventually a million acres or more are producing and South Africa assumes an almost dominant position in the cotton markets of the world.

Development of this industry in fact affords a golden opportunity for South Africa to establish a cotton industry on a big scale whilst the American production is waning, and to grow cotton within the Empire, at the same time affording profitable employment to many hundreds of young South Africans.



A land of boundless promise: a view from the foot of the Rooirand across the Ubombo Flats to Pongola Poort.

Mining Men and Matters.

Mr. H. Warington Smyth, C.M.G., Secretary to the Department of Mines and Industries, returned to the capital from Capetown this week.

* * *

Mr. G. H. Beatty, who has been connected with the Barnato group of mines for over 11 years, and has been general manager of the Randfontein Central and Estates Companies for the last six years, has been transferred to the head office of the Johannesburg Consolidated Investment Company and apppointed consulting engineer. He will act jointly with Professor Lawn in that capacity.

TRANSVAAL GOLD MINING ESTATES.

The following are the particulars of the output for the month of June, in respect of the Transvaal G.M. Estates:—

Central Mines.	
Tons crushed	11,500
Yielding (fine ounces)	3,921
Elandsdrift Mine.	
Tons crushed	1,760
Yielding (fine ounces)	864
Vaalhoek Mine.	
Tons crushed	1,950
Yielding (fine ounces)	864
Estimated value of month's output	£24,959
Estimated profit for the month	3,306

The gold output for the month is valued at £4 6s. 6d. per fine ounce net, after allowing for exchange and realisation charges.

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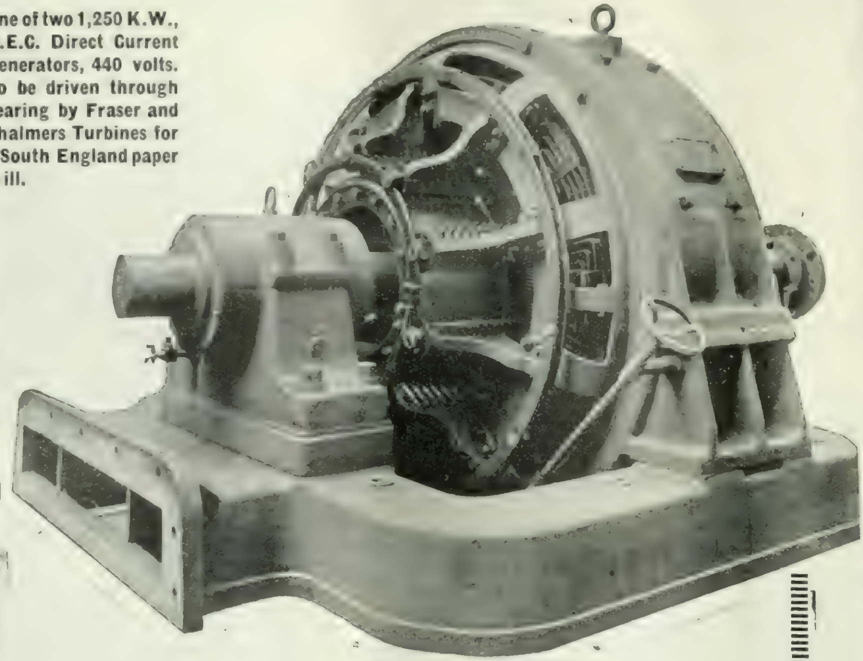

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Cotton in the Barberton District.

A HIGHLY PROFITABLE CROP—WHAT AN EASTERN TRANSVAAL MINE OWNER IS DOING.

A well-known Eastern Transvaal Gold Mine owner, Mr. B. Chew, of the Fortuna Gold Mine, is meeting with excellent results in the cultivation of cotton close to the old Township of what was once the most famous gold field in the Transvaal.

Mr. Chew, in a letter, expresses the greatest interest in the recent articles on cotton which have appeared in this journal, and has very kindly sent us the charming photograph reproduced hereunder, which exhibits in striking form the possibilities that exist for cotton growing in the Eastern Transvaal.

Mr. Chew's letter is as under:

Barberton,
June 23rd, 1923

The Editor,
"South African Mining and Engineering Journal,"
P.O. Box 963,
Johannesburg.

Dear Sir,

Having read with great interest your articles on cotton, it affords me pleasure in sending you the enclosed photograph. This picture does not represent an exceptionally heavy crop, but a highly profitable one, grown in the Barberton district on my farm, "Hallsbury," 1,000 acres, adjoining the town lands of Barberton and stretching from the railway line to Sheba Road.

A fine cotton field on Mr. Chew's farm in the Barberton District.

Neither fertiliser or irrigation has been employed in the production of this crop. The soil is of a sandy nature and deep and contains in places a heavy wash of decomposed granite gravel, and where the wash is most in evidence the plants are at their best.

This picture is a fair illustration of what can be accomplished (in this district) under what may be termed more or less unfavourable conditions, for if it were not for the Jassid pest, which considerably checked the growth at one time, the crop would have been a "bumper" one. However, considerably over 500 lbs. to the acre has already been gathered and picking is still in progress—some bolls are not mature as yet. The type of cotton grown is the "Improved Bancroft," a strain which spinners in England inform us is the most suitable to their requirements yet produced in this district, and I can declare it by far the best cropper after growing for the past three seasons here. It has been freely stated by some advocates of cotton growing in this country that it takes a yield of 800 to 1,000 lbs to the acre to grow profitably, and this may be the case where it is necessary to employ fertiliser and irrigation and perhaps carry some overhead charges; but for the individual farmer growing on unfertilised dry lands I consider a yield of 500 lbs. to the acre will give a good profit at prevailing prices.

I am enclosing a few lines from our cotton and tobacco expert, Mr. Lloyd Worrall, which may be of interest to prospective growers of cotton.

Cotton may mean a big thing to the Union ten years hence. Let us hope the Government will lose no opportunity to promote its growth and rapid expansion. I am glad that your excellent journal is fully alive to the importance of furthering this industry.

Yours faithfully,

B. CHEW.

P.O. Box 121,
B. Chew, Esq.,
Barberton.

Barberton,
May 16th, 1923.

Dear Mr. Chew,

Your letter of the 14th inst. and photograph to hand, for which many thanks. Considering the severe attack of Jassid on cotton during the 1922-23 season, I find that your "Improved Bancroft" cotton withstood the ravages of this insect well.

Observations to date show that strains of cotton in this variety appear to resist the Jassid far more than some of the other varieties of cotton grown in this district. I should advise you to continue growing this variety and continue making seed selection as you have done in the past in order to keep it up to its standard of excellence.

Kind regards, yours sincerely,
(Sgd.) Lloyd Worrall,
The Government Tobacco and Cotton Expert,
Barberton, Transvaal.

[This Journal is expanding its scope and now deals authoritatively with all kinds of industries in the sub-continent. We shall be especially interested in hearing from cotton growers with regard to their experiences in the development of an industry which is making rapid strides in the Union.]

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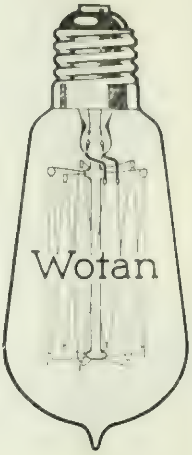

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TOPICS OF THE WEEK.

The National Bank.

Open confession is good for the soul, and a real feeling of relief has attended the very frank and explicit statement made by the Chairman of the National Bank, Mr. James Leisk, at the annual meeting last week. It is true that most people were staggered by the serious nature and extent of the losses incurred by the bank and at the heroic character of the measures adopted to offset those losses. Of course, those losses, actual or contingent, point to a degree of indefensible negligence or inexplicable ill-luck in the past management of the bank. But, having said that, there are many circumstances admissible in extenuation. The times of inflation, when the seeds of trouble were sown, were undoubtedly out of joint. So many new and unprecedented problems presented themselves to bankers that the wonder is the result was not even worse than is now admitted in the case of the National. The new Chairman of the National Bank has faced the unenviable task of cleaning up the mess with characteristic courage and clear-headedness. He has invoked and acted upon the best available expert advice, and he has taken shareholders and the public freely and fully into his confidence in regard to the unpalatable facts of the position and the sweeping measures necessary to cope with it. The result, we are satisfied, will make for real stability and the beginning of a new era of true progress for the bank. The institution is so closely bound up with the commerce and industry of South Africa that its fortunes are of immediate and vital interest to all of us. Credit is a shy and delicate plant, and the business reputation of the whole country is very intimately concerned with the career of a great institution like the National Bank. For the Chairman's admirable survey of the facts, and exposition of the policy to be pursued in accordance with the best advice obtainable, we have nothing but praise. His speech was a model of crystal-clear candour and quiet confidence. The bank, we have no doubt, will now go forward, strengthened and refreshed, for the great work of fructifying and financing the development of the resources of South Africa. Any restriction of these functions of the bank—functions which are at once a bank's privilege and responsibility—is nothing short of a public calamity; and it is all to the good, therefore, that the worst about the bank is known and that all doubt and mistrust regarding its future are now removed and set at rest.

Prohibited Drills.

As a result of the protracted negotiations that have been proceeding regarding dust-making drills, the Government Mining Engineer has now issued an official notice prohibiting the use of certain drills. These are: The short-piston Leyner Drill, in all development work except shafts and winzes, after the tenth day of March, 1924; and the Model 21 Waugh Turbo Drill (Standard), in all classes of work, after the tenth day of January, 1924. In both cases, of course, the makers have been officially notified some time ago of the threatened prohibition, and they have taken steps to put improved drills on the market. The Denver Rock Drill people have introduced Model 21a Improved Waugh Turbo, which has satisfactorily passed the dust tests and been recognised by the Mines Department.

Taxation of Mining.

Sir David Harris spoke very frankly on the subject of taxation at the annual meeting of the New Jagersfontein last week. "The mining industry of the Union," he said, "carries far more than its proportionate burden of taxation. The taxation of diamond-producing companies, since Union, has been increased enormously, probably by 200 per cent. Taking into account the 10 per cent. export duty, at least one-third of the total profit finds its way into the Exchequer. When shareholders are receiving no return on their holdings the export duty has to be paid in cash. Notwithstanding these facts, which are published in the annual reports of the Commissioner for Inland Revenue, and are well known to legislators, certain members of Parliament are continually asserting from their seats in the House of Assembly that the Government is favouring the mining industry at the expense of the farmer. A more inaccurate statement could not emanate from the most ignorant. These highly misleading statements are repeated in an exaggerated form to their over-confiding constituents for political purposes. M.L.A.'s and aspiring legislators should enlighten, but not deceive the electors they are representing or wooing. The road to the position of a seat in Parliament, or retaining it, should be paved with honour and truth, otherwise men would gain their seats in the Assembly by false pretences and to the degradation of Parliament. I have not the slightest desire to unduly tax farmers, whose burdens through drought, pests and diseases are sufficiently trying and harassing without being subjected to the heavy hands of the tax gatherer, but I do say most emphatically that the exact position of affairs should be made known, and statements of a grossly misleading and untruthful character should not be circulated by men in highly responsible positions."

Durban Roodepoort Deep.

The shareholders have, of course, confirmed the action of the directors of the Durban Roodepoort Deep in issuing £100,000 6 per cent. debentures to finance the new scheme for developing the property. In explaining the salient features of this scheme, Mr. [illegible] at the special meeting last week said:—An amount of approximately £22,000 was required for the deepening and sinking of the circular shaft to a depth of 50 feet below the plane of the 17th level and the necessary crosscutting thereto from the present workings. A further £5,500 is required for the purchase of a fan and drift to be erected at the collar of the circular shaft, which will then become the upcast for the mine, with beneficial effects on the underground ventilation and a consequent improvement in efficiency. As you are aware, most of the drilling in the past has been done by hammer boys, and in consequence the sharpest falling off in the underground native labour force has had an almost immediate effect on the tonnage broken. It is felt that by using a larger proportion of machines this position could be materially improved, and it has been decided, therefore, to instal an additional compressor with the necessary piping at an estimated cost of £9,000. There is a further small sum £500 to be expended in connection with the substitution of mechanical haulage underground for the one at present in vogue, which is operated by mules. The amounts I have mentioned so far total £37,000. We then have the expenditure to meet in respect of the purchase of the Princess Estate claims, and the liquidation of our debt to the Central Mining and Investment Corporation, Ltd., and Rand Mines, Ltd. These two items will absorb nearly all the amount remaining of the £100,000, after allowing for the £37,000 to which I have just referred. The advantages anticipated as a result of the adoption of the programme recommended by your directors are:—

(1) Better working conditions, with a consequent increase in efficiency and reduction in costs.

(2) By the acquisition of the Princess Estate claims the greatly increased life of the mine, and for the next few years lateral development instead of vertical.

(3) Profits earned will in the near future be available for distribution amongst shareholders after allowing for a modest amount in respect of debenture interest.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

A Special Commissioner of the Journal will leave for Rhodesia next week with a view to obtaining the latest information and photographs regarding the mineral industries of these territories.

* * *

Constructional Work at West Springs.

Preliminary constructional work at the West Springs Mine, the new Far East Rand producer of next year, is progressing satisfactorily. Foundations and concrete work are in hand, and in the near future the equipment will begin to rise from the ground under which development work is progressing satisfactorily.

Geduld Proprietary.

Geduld's extended plant is now in operation, but, obviously, some little time must elapse before the whole of the new equipment is in full normal running order. Last month's output at Geduld was valued at £105,288, as compared with £98,974 in May, and the tonnage crushed was 1,500 tons more. It is interesting to note that last month the Geduld Proprietary forged ahead of its rich sister subsidiary, the Modder Deep, in so far as output was concerned.

* * *

"Goodrich Tyres."

In addition to the Mining Material Branch of their business, Messrs. J. H. Vivian & Co., have now been appointed General Distributors for the well-known Goodrich "Silvertown Cord" tyres and tubes, for all classes of motor vehicles. To enable them to adequately stock and show their mining materials, as well as this additional line, Goodrich tyres, the firm have now moved to commodious premises and will occupy the whole of the 1st floor of Claradon House, more generally known as the Ford Service Station, south end of Eloff Street. With this enlarged space Messrs. J. H. Vivian & Co. will be in a position to handle business expeditiously and bringing into the motor field the same careful attention to detail which has always marked the firm's activities in mining material, we feel sure that such a reliable make of cord tyre as the Goodrich, increased business should be their reward.

* * *

Western Rand Estates.

Details of the long-expected reconstruction scheme of the Western Rand Estates are now available. It is proposed to reduce the present capital of £202,500, now divided into 405,000 shares of 10s. each, to £50,625, to be divided into 405,000 shares of 2s. 6d. each. In this way the actual number of shares held by each shareholder will not be changed. In order to liquidate the debts of the company and to provide a certain amount of working capital, the extraordinary meeting will authorise the directors to offer to shareholders two shares at 2s. 6d. per share for each share held by them. Thus, should all the shares be taken up, the capital will be increased to £151,875, by the creation of not exceeding 810,000 shares of 2s. 6d. each, which should produce £101,250. This will provide for the payment of the company's liabilities and for the other immediate requirements of the company and will enable the directors to negotiate for the necessary capital to develop, equip, and bring the property to a producing stage, having first placed the company and the shareholders in a favourable position.

* * *

An Unsuccessful Ranching Co.

Considerable interest has been manifested in the affairs of the West End Ranching Co., Ltd., which is now in liquidation. The company was formed for the purpose of acquiring a certain ranch known as the West End Ranch, District of Mafeking, and also the Farm Vlakfontein No. 197, District Standerton, for ranching and farming operations which it had been carrying on since August, 1921. Approximately the acquisition of the property, improvements, reduction of debts and bond, running expenses, salaries and purchase of pure-bred bulls and other cattle, and the company had now approximately 214 head of pure-bred cattle and 1,832 head of other cattle. Since incorporation £11,989 had been received from the sale of cattle. Owing to the great depreciation that had taken place in the value of cattle in the Union, and in the value of the ranch and farm, etc., the company had lost more than 75 per cent. of its paid-up capital. The company was indebted to the South African Townships Estate and Finance Corporation, Ltd., for £38,000, and for portion of the purchase price of the Ranch, £4,000 (both of which were secured by first mortgage bonds), and was also indebted to the Standard Bank of South Africa, Ltd., for £6,482, to William Fleming (for Brown and Fleming), £845, to Aubrey Hyman, £513, and Dundas Simpson, £1,815.

Prospects of the Tobacco Industry.

FACTS AND FIGURES ABOUT THE "FRAGRANT WEED"—A COMMODITY IN WHICH SOUTH AFRICA IS ALMOST SELF-SUPPLIED—MACHINES THAT ARE MORE THAN HUMAN—EXPERT ADVICE FOR GROWERS—BRIGHT PROSPECTS FOR PROMISING MEN.

It is only when one investigates the tobacco industry that a realisation is brought home of the enormous possibilities of the "fragrant weed." Already in South Africa it represents a most prosperous industry, affording further employment to something like 5,000 whites, whose earnings aggregate well over a third of a million pounds per annum. These figures may not seem particularly impressive when compared with such an established industry as gold mining, for example, but the manufacture of tobacco is comparatively in its infancy, and it is not easy to forecast its future development. In the last year for which official figures are available the value of the raw material South African produce—was £1,019,000; in the process of manufacture a value of £1,352,000 was added, and the finished products thus reached a value of £2,371,000. As compared with the previous year, this represented an increase of over £400,000, an expansion of nearly 20 per cent. in one year in a young industry is by no means an insignificant achievement.

S.A. Tobacco 90 per cent. of Total.

South Africa now grows and manufactures something like 90 per cent. of its tobacco. In 1921 no less than 16,620,640 lbs. of tobacco (exclusive of tobacco produced in native locations was grown in the Union. Rather more than half of this was grown in the Transvaal, where there were then 15,711 acres under tobacco cultivation. The yield of tobacco in that year was only about 1½ million lbs. more than the figure of ten years previous, but the manufacture had increased enormously, while the imported tobacco correspondingly decreased. Thus in 1922 tobacco came into the country to a total value of £91,017, whereas three years earlier the figure was £159,241. Of these totals well over one-third represents the value of cigars. When the figure relating to unmanufactured tobacco is taken, the comparison is very much more striking. Thus in 1919 we imported to the value of £42,369, whereas last year the corresponding figure was only £12,152. From this it will be seen that South Africa is very rapidly becoming independent of the imported varieties of tobacco.

Huge Cigarette Consumption.

In the year 1920-21 Union tobacco leaf valued at £452,076, and Rhodesian leaf valued at £160,879, was manufactured, while the imported tobacco made up in this country amounted to only £41,923. In that year no fewer than 1,704,387,510 cigaretttes were made in this country, to the value of £1,698,117, while over 8½ million pounds of tobacco were manufactured to the value of £629,003. The cigarettes imported last year were worth only £40,000, and to-day the imported cigarettes consumed in this country is probably less than 2 per cent. of the total.

Subsidiary Industries.

The industry is not only valuable from the point of view of utilising a raw product which is being grown in increasing quantities, but is creating some valuable subsidiary industries. Two years ago, for instance, packing materials were used to the value of £348,578, and that total will be greatly increased since, so rapid is the progress which this industry is making. The value of the machinery and plant used in the manufacture of tobacco in this country in 1920-1921 was put at approximately £150,000, but very considerable developments and additions have since been made, and to-day this value must be at least double, while the land and buildings of the factories—which now number nearly 70—approximates to £300,000.

Learning from America.

There are some highly salaried specialists engaged in the industry—it is said that at least half a dozen men are in receipt of from £1,500 to £2,000 a year. The industry, which is now organised in this country to a state of efficiency probably reached by no other industry except gold mining, sends its promising young men to the tobacco plantations of America to study methods of cultivation there; they then return to this country and instruct the grower how to improve their crops. Apprenticeships of three years' duration are also served on the South African farms, and the leaf buyers' is a responsible and lucrative business. The leading manufacturers in South Africa are in fact spending very considerable sums in educating the farmer to pay more attention to the cultivation of the tobacco.

Up to the present the greatest handicap the industry has experienced is the growth, especially in the Transvaal, of a large quantity of low grade tobacco, which no reputable manufacturer will use for standard brands of smoking mixture or cigarettes. If the farmers would only realise it, there is from 5d. to 6d. per lb. difference in the price the superior leaf will fetch.

Worth 25s. a Box in Bond Street!

Recently a big improvement has been shown in the Rhodesian tobacco, but according to one expert consulted by a representative of the S.A. *Mining and Engineering Journal*, some of the best tobacco produced in this country has been developed in the French Hoek district. "If the cigarettes made from this choice tobacco," he said, "were put up in decorative padded boxes, they would sell in Bond Street at 25s. the 100." The Cape growers are also more progressive and alive to the value of higher cultivation of the tobacco plant than are the Transvaal farmers.

There is now installed in certain of the South African factories some of the very latest tobacco and cigarette-making machinery in the world. These machines are almost more than human in their intricacy and unerring skill. This is notably the case with the cigarette-making machines, which turn out something like 600 cigarettes every minute. Not long ago improvements were made to the type of machines then in use, which greatly speeded up their output, with the result that all that valuable plant had to be scrapped and superseded by the later type, simply because of its greater efficiency.

The South African makers are determined to retain, and even increase, their hold on the local market, and are not satisfied even with producing 90 per cent. of the 100,000,000 cigarettes or the 120,000 lbs. of pipe tobacco consumed every month in the Union. They have not yet troubled about the export market because there is still something like 10 per cent. of possible business in this country—and they won't be happy till they get it! There is really no reason why they should not succeed, because the country can grow tobacco that will challenge comparison with that of any country in the world. The plant is here, and the organisation.

A Highly Organised Industry.

What this organisation amounts to may be judged from the fact that in one store in Johannesburg there is continuously in stock no less than 60,000,000 cigarettes. This stock is checked every night, and there is never a missing packet of 10 that goes unaccounted for. The huge lorries in which supplies are carried to the retailers and to the railways for transport to other parts of the country are timed to arrive and depart from the stores with the regularity of trains. The concern has its own garage and motor-car mechanics, and its native employees are comfortably housed on the premises.

Later on, when the South African smokers' wants are catered for to the extent of a 100 per cent. consumption of the local "weed," the manufacturers may turn their attention to the overseas market, where they already have the inducement of a preference of 1d. per lb. in the Empire. "But we are not worrying about export yet," said one of the controlling heads of this fine organisation which has in a few years made such remarkable progress and therein sets a stimulating example to other industries.

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SHIPS AND SHIPPING.

WHY STATE-CONTROLLED VESSELS FAIL—C.P.R. PRESIDENT'S VIEWS.

(From a Special Correspondent.)

LONDON, June 8.

Appropriately enough, the announcement of India's ambition to create a State-owned mercantile marine synchronises with the publication of an important statement on Government-controlled shipping by the President of the Canadian Pacific Railway.

Mr. G. W. Beatty is a recognised authority on both sides of the Atlantic on all questions relating to the running of ships, and his views on State ownership, expressed to a representative of "Lloyd's List" immediately upon his arrival here from Canada, might have been framed as a reply to the fallacious arguments of Mr. Haji, who is one of the most active of the pro-State ownership party in India.

"Do you consider that the shipping industry produces the best results when controlled by private ownership?"

"Inevitably. The best test of that is seen in the building of the British Mercantile Marine. There is no indication in Canada of any desire to extend the State ownership of vessels beyond those forced on the Government during the war, and a portion of which the Government has already expressed a wish to dispose of."

"Why do Governments invariably fail to make shipowning a success?"

"The machinery of Government is not designed to administer steamship operations, which are peculiarly a matter for private enterprise in the way of development and administration."

These answers should carefully be considered and investigated by responsible opinion in India before the taxpayers are definitely committed to the particularly costly scheme which is now being advocated.

Board of Trade Safety Order.

At the beginning of next month the British Mercantile Marine was to have come under the new Board of Trade regulation requiring about 70 per cent. of ships' crews to be boatmen in order to ensure greater safety in case of emergency. This regulation required stewards and firemen to take the same examination as able seamen in the matter of manning lifeboats, and those passing the test were to have received certificates of efficiency, which would have been attached to the discharge papers. It is understood, however, that the official enforcement of the regulation has been postponed for a year, in order that certain other safety suggestions recommended by a Select Committee may be consolidated for general adoption.

As a matter of fact, many of the leading lines have not waited for Government action. They have already made arrangements to fulfil the terms of the Order originally intended to operate on July 7st. For instance, on the White Star liner *Olympic*, which left Southampton for New York this week, 80 per cent. of the stewards had certificates. Other companies, including the Union-Castle, Cunard, Canadian Pacific, and certain of the lines running to Australia, are immediately complying with the regulation, if they have not already done so.

With regard to the Union-Castle Company, it is interesting to learn from the Marine Superintendent that for some considerable time past—even before the *Egypt* disaster directed attention to the question of boatmanship and prompted action by the Board of Trade—his company had embarked upon a definite policy. "Our aim has always been," Captain Butterwick informed me this week, "to anticipate legislation as far as possible. It would not be too much to say that for some time past 75 per cent. of our crews have been efficient at boat work. Our aim is to obtain 100 per cent. efficiency, and this, we hope, when minor difficulties have been overcome, to accomplish. Moreover, we were the first company to institute the gong system for assembling passengers and to introduce boat drill as a regular feature of the routine at sea."

Crippled by Taxation.

It seems almost incredible that the Royal Mail Steam Packet Company and its allied lines should control considerably over 2,000,000 tons of shipping, or nearly one-ninth of the British Mercantile Marine. Yet this fact was one of the many interesting statements made at the recent annual meeting of the company in question.

Lord Kylsant, its chairman, who presided, had some very pertinent remarks to make on the subject of taxation. Prior to the war, he said, taxation on shipping was, with possibly one exception, governed by the sound principle that, as profits made by ships were earned on the high seas, each country should only tax the profits of its own shipping. Under the stress of war the system of a country taxing the shipping profits of another country when the vessels of one serve the ports of another became a practice. This led to retaliatory measures to such an extent that income derived from shipping is now often taxed twice—namely, first in the foreign country from which British ships load cargo and embark passengers, and, secondly, in the United Kingdom. The Government of the United States of America realised that this state of affairs was most unjust and inequitable, and they have offered exemption from taxation to the shipping of all countries who shall agree to give similar immunity to American vessels. Lord Kylsant hoped the British Government would see its way to accept this very reasonable offer by introducing into the Finance Bill a clause providing for the exemption from British taxation of the ships of those countries which grant similar exemption to British ships. He thought that such action on the part of Great Britain, as the premier maritime nation of the world, in meeting the offer of the United States Government, would be followed in due course by other maritime nations, and thus simplify taxation, while at the same time removing a real hardship and one that constitutes a handicap on British shipping.

Panama and Kiel Canals.

The phenomenal increase in the oil-carrying trade between southern California and the eastern seaboard of the United States is reflected in the Panama Canal returns for the first quarter of the present year. The total quantity of cargo moved eastward through the Canal during the quarter was 1,634,000 tons, as against 844,000 tons for the previous quarter, and that moved westward was 655,000 tons, as against 413,000 tons. Of the eastbound cargo, 1,143,000 tons out of the total 1,634,000 tons, consisted of oil in bulk from Los Angeles to the Gulf and Atlantic ports, an increase of 800,000 tons over the previous quarter. The general cargo passing in either direction increased from 892,000 to 1,145,000 tons.

Traffic returns relating to another great waterway, the Kiel Canal, have also been made available this week. The number of vessels passing through it during March was 3,575 of 1,051,298 net tonnage, an increase of 1,100 over the preceding month. The German share of the total, reckoned according to number of ships, amounted to 78·66 per cent., and according to tonnage 49·85 per cent.

Arranged according to flag, the shipping was distributed as follows: German, 2,812 vessels, 224,690 tons; Swedish, 480 vessels, 110,067 tons; Danish, 236 vessels, 98,941 tons; British, 78 vessels, 90,816 tons; Norwegian, 77 vessels, 61,009 tons; American, 16 vessels, 50,013 tons; Dutch, 100 vessels, [illegible] tons; Finnish, 25 vessels, 17,057 tons; Japanese, 9 vessels, 12,772 tons; Danzig, 21 vessels, [illegible] tons; Russian, 6 vessels, 7,228 tons; Belgian, 3 vessels, [illegible] tons; French, 5 vessels, 4,272 tons; other countries, 16 vessels, 11,579 tons.

Submarines for Salvage Purposes.

German salvage experts have found a new and profitable use for the hulls of two now dismantled submarines that once belonged to the Imperial Navy. These hulls, after the removal of the essential war parts, have been released and handed over to Germany for employment for commercial purposes by the Naval Inter-Allied Commission of Control.

In November, 1922 the Swedish sailing ship *Mascotte* went ashore off [illegible], in the Lubeck Bight, and in order to reach her from the open sea, the salvage steamer *[illegible]* had first to dredge out a channel of some two and a half fathoms to where she was lying in water about a fathom deep. Eight strong steel hawsers were then passed under the *Mascotte's* keel and attached by divers to two submarine hulls sunk on either side of her. By means of compressed air, the water was then driven out of the submarines and they rose, lifting the vessel with them.

Far-reaching salvage possibilities are now suggested by the success of this original method.

Famous Clipper Destroyed.

The *Glory of the Seas*, a famous American clipper built by Donald McKay, and launched at Boston in 1869, the same year as *Cutty Sark*, has been destroyed by fire on the beach at Seattle. In 1875 she made the passage from San Francisco to Sydney in 35 days, a great record, and came back in 53.

A number of residents of Boston interested themselves in the question of her preservation, but it would have been a very considerable undertaking to reconstruct, repair, rerig and ready her in her old form and bring her round from the Pacific Coast to Boston, and the question of where to put her when arrived and of how to maintain her would also have presented great difficulties. Unlike the more famous *Cutty Sark*, which has been saved for the British nation through the generosity of Capt. Dowman, the *Glory of the Seas* was constructed of soft wood.

Captain Alexander Douglas.

The death at the age of 65 of Captain Alexander H. H. G. Douglas, Commander R.N.R., will be regretted by a wide circle of friends in South Africa and Australia. For many years he had been well-known in both countries.

Captain Douglas joined the Aberdeen Line in 1873 serving as apprentice in the sailing ships *Centurion* and *Thyatira*. In 1881 he was appointed an officer in the company's first steamer, *Aberdeen*, and later served in the steamship *Australasian*. In 1887 he was promoted to the command of the new steamer *Damascus*; in 1899 to the new steamer *Salamis*, in 1907 to the *Miltiades*, and subsequently to the new steamers *Themistocles* (in 1910) and *Euripides* (in March, 1914). He was in command of the *Salamis* when she was requisitioned to take up the Australian naval contingent to China during the Boxer trouble in 1900; and he commanded the *Euripides* from the time she was requisitioned as a transport in 1914 up to the date of his retirement, owing to ill-health, in May, 1917.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

July 19.—Transvaal Consolidated Lands (s), 12 noon.

August 10.—Transvaal Consolidated Lands (s), 12 noon.

Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

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ENGINEERING SECTION.

Johannesburg's New Municipal Reservoir.

DETAILS OF EXCAVATION—SULLIVAN ROTATORS RENDER GOOD SERVICE.

The largest quarrying work now in progress, is, undoubtedly, the excavating of the new Johannesburg Municipal reservoir at Yeoville. Some illustrations of the work are given on this page, and, at the present rate of progress, it is expected that it will be completed in the scheduled time at the end of this year.

The Drills Employed.

In addition to the hand-drills employed, Sullivan Rotators are in successful use, driven by a Sullivan compressor. The Sullivan rotators drill from 25 to to 30 holes per shift. In the hard rock the average depth drilled is 4 ft., and in the soft rock they drill holes from 6 to 10 feet deep. A few words about the drill employed, which is now doing good work on some of the mines, may here prove of interest. The Sullivan Rotator claims to be an "all around" rock drill machine. It was introduced about ten years ago as an improved type of hammer-drill, capable of doing all kinds of drilling from mining to [illegible]. In the present instance heavy open cut work.

The Rotator is a "one man" hammer drill in the fullest sense, weighing from 29 to 40 pounds. It is equipped with automatic steel rotation, is built in separate air and steam types, and may be used as a hand tool or on a mounting. Rotators drill holes from 8 to 12 or more feet in depth, for 1¼ inch powder, and are available in several models, to suit varying conditions. Sullivan Drills have been leaders in educating the rock-drilling public to the benefits of greater cutting speed, of reduced weight, and of increased power economy. The "one man" piston drill for mining, the light "plug" drill for granite quarries, the air-feed stoper, the air-jet sinker and the Rotator itself, all

The New Yeoville Reservoir.

have marked important steps in the progress of rock drilling machinery. Leading characteristics of Rotators may be summarised as follows: (1) Automatic rotation of drill steel, (2) air or steam operation on separate tappet, (3) drill steel released, (4) automatic lubrication, (5) automatic ejection of cuttings from drill holes, (6) cushioned return stroke, (7) adaptability to any mounting, (8) simplicity and compactness, (9) drilling speed and power, (10) strength, stability and low upkeep cost. All the claims made on behalf of this drill are amply borne out in practice, and the Sullivan is rapidly winning an important place for itself as an efficient and economical rock breaker.

The Compressor.

The compressor used at the Yeoville reservoir is a Sullivan, class W.G. 6, size 7 by 6. In these compressors, ranging in capacity from 60 to 510 cubic feet, for standard pressures, reliability and continuous service have been held as the prime objects to be attained in design and construction. Simplicity, compactness, power economy, a minimum of care and attention, and moderate price are other desirable features of these machines. In their manufacture the company has combined the advantages of uniformity and accuracy, gained by quantity production on the interchangeable part system, with care in the selection of materials, pains and skill in construction and standards of excellence that are characteristic of all Sullivan Compressors. These Sullivan Compressors run right and stay right, assuring to their owners a constant air supply over long periods.

Sullivan Rotator at work at new Yeoville Reservoir.

The Sullivan "W.G.-6" Air Compressor consists of a single air cylinder, securely bolted to a sturdy frame, which carries a crank shaft having a belt pulley on one end, and a fly-wheel on the other. Simplicity and strength are chief characteristics of this type, and to these are added ease of adjustment of the wearing parts, and their ready and inexpensive renewal when worn. Counterbalances on the crank aid the compressor to run smoothly, with little vibration or strain upon moving parts. The machine is practically automatic, running continuously and with but little care, since the moving parts are enclosed in an oil bath with tight removable covers, which retain the oil and exclude dust or grit. An unloading device on the air inlet valve saves power when the demand for air is less than the output of the machine.

The frame has all the ruggedness found in frames of large, heavy duty engines, the metal being carefully distributed along the lines of greatest stress. It is extended to the foundation in the form of a broad foot, reaching from beyond the main bearings up to the air cylinder. It has ample cross head guides bored in exact alignment with the air cylinder. The connecting rod is of open hearth steel of a substantial pattern, with a crank pin box of the marine type, provided with removable, die-cast, babbitt linings made in halves. This rod has a solid slotted crosshead end, with wedge adjusted bronze boxes. It is exceedingly strong and reliable.

BRICKS FROM MINE DUMPS.

It is believed that at last the mine dumps will be turned to commercial use by the manufacture of bricks. It appears that some time ago Mr. W. Ingham, chief engineer to the Rand Water Board, caused to be sent oversea, for testing in the new plant that has produced lime-sand brick for actual buildings, hermetically sealed samples of sand from the dumps of the George Goch, Ferreira and Robinson Deep Mines, together with quantities of white and blue lime from the Northern Lime Co. and the Ventersdorp Co. The sands were first freed from all trace of cyanide. Mr. W. Arnott, engineer, of Glasgow, took these samples of sand and lime to the Continent and there personally inspected the process. As a result, samples of bricks have reached Johannesburg, and it is claimed that they fill all the purposes of faced bricks at a low cost. They are hard, and grey-white in colour. They have been inspected with great interest, and a company has been formed. It is stated that 56,000 of these bricks can be turned out per day at a cost of 27s. 6d. per thousand. In his report Mr. Arnott says the bricks "are better than the best clay bricks, and are justly known as hard bricks. A crushing resistance of over 4,000 lbs. per square inch has been obtained, and a degree of hardness far surpassing clinker bricks.

SELECTED NEW PATENTS.

Alexander John Arbuckle. Improvements in apparatus for classifying and concentrating ores and the like.

James Le Gallais Thelland. Improvements in and relating to self-locking nuts.

Frederick William Bolt and George John Newman. Patent hose connection and stop valve.

Sidney Pratt Blackmore. Improvements in means for lubricating percussive rock drilling machines and similarly operated machines or tools.

Nicolaas Hubert Langenberg. Improvements relating to gear wheels.

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New Eland Diamonds Annual Meeting.

REVIEW OF PROSPECTS—CAPITAL INCREASE CONFIRMED AT SPECIAL MEETING.

The eleventh annual general meeting of the shareholders of New Eland Diamonds, Ltd., was held at Cullinan Buildings on July 4. Shareholders present and proxies represented 51,698 shares. Sir Thomas Cullinan, D.S.O., presided. He said: Since we met last November, we had then only resumed washing, and it took up till the end of the year to get going. Since then, I am glad to be able to say, we are putting through a larger tonnage, and we hope in the near future to reach our full capacity. The grade has also improved, and the working costs have been reduced. Turning back to last year's account, you will see from the revenue and expenditure account that there was a loss of £2.971 17s. 6d., made up as follows: Upkeep expenses whilst shut down from January to end of September, interest on overdraft for the year, to which must be added £3,016 0s. 5d. written off for depreciation, less sundry revenue, £127 1s., thus reducing the credit balance from last year of £19.621 14s. to £13,760 17s. 1d. to credit of profit and loss account. As mentioned at our last meeting the Standard Bank has continued to finance us against the bond they hold over the property. As you will have seen from the manager's report, the plant and equipment have been put into good order. The manager's report estimates 1.091.200 loads developed, but that no allowance had been made for ground not recoverable, or for intrusions of stone. Also that the 360ft and 425ft levels had still to be developed and blocked out before this ground becomes available.

Working Costs Reduced.

The statistical table on page 8 shows that for the working period of the last three months of the year the cost per load was 6s. 11·81d., as against 8s. 6·68d. for the whole year of 1920, and the value per load 8s. 7·90d., as against 11s. 3·90d. for the same period, but I do not think it fair to compare a period of three months with a whole year. However, I am glad to say that my anticipation at our last meeting, that our working costs in future would be under 6s. per load, has been verified since.

I think at this stage it would be well for me to summarise what we have said in the past, and in comparison with what we find to-day. Shareholders will remember that I advocated using all profits for the development and equipment of the property in order to reap the full benefit at some future time.

The capital put back into the mine represents £106,828 14s. 7d. If we had paid this money out by way of dividends from time to time and had run the mine to a standstill it would have been of no use going to the public for more capital. Nobody would have believed at times, when the diamond market was not good, that you could attain the results anticipated, whereas to-day with the policy we have hitherto adopted, we are in a position to say that the capital has been well spent in such development and equipment, and although we owe a little money we are in a very sound position.

Yearly Profit of £40,000.

As I have got to propose, at the extraordinary meeting following this meeting, the adoption of the recommendation to increase the capital by the issue of 25,000 shares of £2, this will increase the capital to £100,000, or a market value of at to-day's prices, say, £200,000, and to take a very conservative estimate of the future I compute that £40,000 profit for a year's working should be easily realised. This is at the present price of diamonds, which is considerably below the high water-mark previous to the slump, and I feel certain that we can look forward to better prices in the future.

Of course, one cannot in any way be infallible; we may have more wars and rumours of wars, which seem to have a most disturbing effect on diamond mining. There are times, however, when even this idea plays you tricks—for instance, when the Great War started all diamond producers considered it advisable to close their mines, as luxuries would not be the order of the day; in this case, as you know, there was a boom in diamonds two years after the war started.

To sum up, it really means that there is no one who can foretell with certainty what the near future may bring forth; at present the tendency, as I have remarked, seems to indicate a brighter future. He then moved the adoption of the reports and accounts, which were duly passed.

In reply to certain questions, the Chairman expressed the belief that the grade was likely to be maintained, but this was, of course, a difficult matter to forecast precisely. He was also hopeful that better prices would be realised, and that mining operations would extend over a wider area.

Mr. W. P. Taylor asked what the recent profits were estimated at, and the Secretary replied that in May these were estimated at £2,740, and June between £3,200 and £3,400.

Mr. Taylor: Can the shareholders speculate on this being the lowest value in diamonds and look for a higher production in future?

The Chairman: Eventually, I am sure.

Mr. W. P. Taylor's Views.

Mr. Taylor, in seconding the adoption of the report and accounts, said the Chairman had been extremely moderate in his references to his own work and estimated the future prospects on a most conservative basis. As an old diamond man he knew with what bright promises many ventures were brought out and how disappointing were the results, and he could assure the shareholders that there was a great deal for which they were indebted to Sir Thomas that had not been disclosed. The concern had reached its lowest point and they had everything before them. The mine was now operating on the same system as De Beers and there was five years' working in sight. With a better diamond market and an increase in tonnage on which they could depend, the future was very bright.

The Chairman: That is in the lap of the gods.

Mr. Taylor: I cannot be as modest as Sir Thomas, because it is not likely that De Beers are going to let the diamond market go down, and we can always produce diamonds cheaper. He added that all the Chairman's promises in the past had been fulfilled and they could have every confidence in the concern so long as he was its head.

The Chairman briefly acknowledged Mr. Taylor's references and the report and accounts were then adopted.

Sir Thomas Cullinan and Mr. B. W. Brayshaw were re-elected directors and Mr. Evelyn W. Smith reappointed auditor.

SPECIAL MEETING.

Sir Thomas, in moving at the special meeting the resolution for the increase of capital, said: I've really said so much that it only remains for me to propose the adoption of the resolution, but in doing so I would point out that there has been an idea that the issue should have been guaranteed. I think it is usual to do this, but I looked at it at a different standpoint, it may have been a selfish one; being a large shareholder I did not see why I should give 5 or 10 per cent. of my interest away. I felt that other shareholders would look at it in the same light, that the mine is at present doing very well, and there is no reason why it should not do better, and I as a shareholder have an option proportionate to their holding for two months to take up those shares. This [illegible] however, [illegible] [illegible].

As you will see from the proposed resolution it is not like the issue of the Modder and Premier, but if shareholders think a guarantee is necessary it can be discussed right here and now and can be amended accordingly.

In reply to Mr. Taylor, the Chairman added that the shares offered would be taken up in sufficient quantity to carry through the board's purpose. He would not allow shares to be sold after the expiry of the two months in which shareholders were allowed to exercise their option to be disposed of at £2. He believed they would get very much more than £2 for them. He assured Mr. Stanley Maynard, who also asked a question on this point, that even taking the very worst position and assuming that no shares were taken up the company would go on as at present and pay its overdraft. They wanted a reserve, however.

Mr. Taylor, in seconding the resolution, agreed that a reserve was necessary and associated himself with the Chairman's attitude as to there being no necessity to incur the expense of a guarantee.

In reply to another shareholder, the Chairman said the company at present owed £37,000. It was originally £50,000.

The resolution was then carried unanimously.

UNION CORPORATION GROUP.

Particulars of the operations of the companies of this group for the month of June, 1923.

Company.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev.) Total
Geduld Proprietary	66,500	23,582	£105,288
Modder Deep	43,600	23,430	£103,992
Totals and averages	110,100	47,012	£209,280

Company.	COSTS. Total	per ton.	PROFIT. (including) Sundry Rev. Total.
Geduld Proprietary	£63,484	19 1	£41,804
Modder Deep	£38,524	17 8	£65,468
Totals and averages	£102,008	18/6	£107,272

The above results are arrived at by valuing gold at 89s. per fine ounce.

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The Half-Year's Dividends.

GOLD AND MISCELLANEOUS DISTRIBUTIONS.

The following are the dividend declarations for the first half of the current year compared with those of the first half of 1922:—

Company.	Amount. First half year 1922. s. d.	Amount. First half year 1923 s. d.
Aurora West	—	0 6
Brakpan		4 0
City Deep, Ltd	1 6	4 0
Crown Mines, Ltd. 10	0 6	2 9
Ferreira Deep ...		0 9
Government Areas	4 0	6 0
Geduld Props. ...	1 3	2 3
Langlaagte Est.		2 0
Modder Deep Levels 5	2 6	3 0
Modder "B" G.M. Co. 5	1 6	2 6
Meyer and Charlton ...	10 0	10 0
New Goch	—	2 0
New Modderfontein 10	2 0	5 0
Nourse Mines ...	0 6	0 9
Robinson Deep "A" ...	—	4 0
Rose Deep	1 0	1 3
Springs Mines	—	2 6
Sub-Nigel	0 9	0 9
Van Ryn Deep	2 0	5 0
Van Ryn Estates	1 0	1 6
Wit Deep		1 6
Witwatersrand (Knights)	1 0	3 0
Village Deep ...	—	1 0
Wolhuter	—	0 6

The dividends declared by miscellaneous companies for the half-year have been:—

	Rate.	Amount.
Anglo-American Corporation ...	7½	£278,884
Anglo-French Exploration	5	25,000
Apex Mines	2½	3,750
Central Mining (£8)	10/-	212,500
Clydesdale Collieries ..	5	9,250
De Beers (50/-) Pref. ...	25/-	1,000,000
Johannesburg Con. Invest.	12½	493,750
Natal Navigation Collieries ...	5	33,262
Premier Diamond Def.	7/6	120,000
Premier Diamond Pref.	6/3	50,000
Pretoria Cement	7½	47,250
Rand Mines (5/-)	60	306,773
Transvaal & Delagoa Bay Colls.	7½	20,812
Witbank Colliery	7½	25,841

TENDERS CALLED FOR.

The following tenders are called for by the S.A. Railways and Harbours and the Johannesburg Municipality:—

Railways and Harbours: Cable, due 4th July, 1923; Ford lorries, 5th July; switchgear, 5th July; vacuum release wire, 10th July; transformers, 10th July; motor lorries, trailers, etc., 11th July; lead and antimony, 16th July; waste, 20th August.

Johannesburg Municipality: Angle iron, due 9th July, 1923; treasury receipt books, 9th July; air compressor, 17th July; electric lamps, 17th July; D.C. recording ammeters, 17th July; Burmah teak, 17th July; ticket nippers, 17th July; travelling cranes, 17th July; concrete pipes, 17th July; scrap cast iron, 17th July; trailer for steam wagon, 17th July; black piping, 21st July; wrought iron piping, 23rd July; field coils, 8th August; license plates and badges, 8th August; felt, 14th August; aluminium paint, 27th August; asbestos covered copper wire, 30th August.

The Week in the Sharemarket.

EUROPEAN TROUBLES AFFECT THE MARKET—DIAMONDS DULL—RHODESIAN ACTIVITY.

The market has suffered considerably from the political uncertainty in Europe, and it appears that so long as the present complicated situation exists, speculative interest will be small. Prices present a ragged appearance, mostly at a decline for the week. The returns from the mines for the month of June, although having the benefit of higher gold, did not come up to expectations. In some instances, such as Nourse Mines, costs were very high. Modders and Crown Mines were satisfactory, the profit of Crown Mines being very good. Barnato stocks have suffered during the week. Van Ryn Deeps have been sold, and Randfonteins are barely steady. New States have been sold on rumours of unsatisfactory results from the plant so far The house however, takes a more cheerful view. Union Corporation stocks and Anglo-American stocks have suffered in price with the others, owing to lack of business. General Mining stocks present no new feature. There has been a little business in Transvaal Silvers; a London quotation has been granted for the shares. Diamonds have been dull. There are signs of a slight improvement, Consolidated Diamonds and De Beers being both fractionally better. Crown Diamonds have not gained in the week, and West Ends have gone slightly lower Investment stocks have had a little more business than usual. National Banks have firmed and passed almost out of the market for the time being Reserve Banks have had a fair amount of business Loans, especially 6 per cent., have been bought.

Rhodesians.—Almost no local business has been put through in Rhodesians. Satisfactory reports continue to be received regarding Cam and Motors, and London and Rhodesians have been firm on rumours of a pending flotation, in which they will be largely interested. Reports of good development at Shamva are being circulated locally. Broken Hills have been dull on a weaker metal market. In spite of the difficult conditions the week on the sharemarket has not been altogether profitless. Most of the buying has been directed towards Investment stocks, but there is a good deal of speculative spirit about which would take a hand in a rising market. Several shares are being picked up at what appears to be cheap prices, and the investor of to-day will no doubt benefit substantially if he will be a little patient with his holdings.

	Fri 29th.	Sat. 30th.	Mon. 2nd.	Tues. 3rd.	Wed. 4th.	Thurs. 5th.
Anglo Amer. Corp.	22 6	22 6	22 0*	22 0*	21 9*	21 6*
Apex Mines	6 0*	6 0*		5 0*	5 6*	
Aurora Wests	6 6*	6 0*	5 9*	5 6*		5 9*
Brakpan Mines	61 3	61 0*	61 3*	56 3*	56 0†	55 9*
Brick and Potteries		—	4 0*	4 0*	4 0*	4 0*
British South Africa	12 9*		12 9*	12 9*	13 0*	
Bushveld Tins	0 3	0 3*	0 3*	0 3*	0 3*	
City and Suburban	3 0†	3 0†	3 0†	3 0†	3 0†	2 9
City Deeps	54 6*	54 3*	50 0	*50 6	49 0*	49 6
Clydesdale Collieries	16 3*	—	17 0†		17 0†	17 0†
Con. Diamonds	19 3*	19 3	19 3*	19 0*	18 9†	19 6
Con. Investments	32 0†	32 0†				
Con. Main Reefs	8 3	8 1*	8 3	8 3	8 3	8 2
Coronation Collieries	25 0*	25 0*				
Coronation Freeholds		0 4*	0 4*			0 5*
Cor. Syndicates	5 0*	5 0*	4 10*	4 10*	4 10*	4 10*
Crown Diamonds	6 6*	6 6	6 6	6 6	6 6	6 [illegible]
Crown Mines	50 0*	50 3*	47 6*	46 9	46 6	47 9
Dagga Mines	2 10*	2 10*	2 9*	2 9*	2 9	2 7*
Durban Rood. Deeps	15 3*	15 6*	15 9	15 6*	15 6	15 6*
East Rand Coals	1 0	1 0	1 0*	1 0*	1 0*	1 0*
East Rand Deeps	0 7*	0 7	0 7	0 7	0 6*	0 6*
East Rand Minings	10 0†		10 0*			
East Rand Props.		5 0	5 0	4 9		5 3
Eastern Golds	0 3*			0 6*		0 6†
Ferreira Deeps	7 6†	7 6†		7 6†		
Frank Smith Dmds.	3 0	3 0*	3 0	3 0		3 1†
Geduld Props.	61 9*	61 9*	60 0	60 0*	59 0*	58 9
Geldenhuis Deeps	4 0					
Glynn's Lydenburgs	11 6	11 9*	11 6*	12 0*	13 0*	13 0
Government Areas	115 0	114 0*	109 6	110 6	109 0*	109 3*
Hume Pipes	8 0*	8 0*		8 6*	8 6	8 3*
Lace Props.	7 6*	8 0†	7 3*	7 6	7 6*	7 9†
Langlaagte Estate	22 6	23 0	21 6	20 6*	20 3	20 1*
Leeuwpoort Tins	2 3*		2 3*	2 3		1 3*
Luipaardsvlei Est			4 6*		4 6†	
Lydenburg Farms					2 6*	
Meyer and Charltons		72 6	71 3*			
Middelvlei Estates	1 0	1 0*		1 0*	1 1	1 0*
Modder B's	24 7*	24 9	22 3*	22 0*	22 3	22 3
Modder Deeps	13 6*	13 9	10 6*	10 6*	10 9†	10 6†
Modder Easts	5 9*	5 9	5 9	5 7†	5 6	5 6*
Natal Nav. Col.		27 9*	26 9*	26 9*	27 0*	
National Banks	£6¼*	£6¼*	£6¼	£6¼†	£6¼	
New Eland Dmds	39 0	39 6*	39 6*	39 6*	40 6	40 0
New Era Cons.	6 6*	6 6*	6 6*	6 6*		6 8*
New Geduld Deeps		—	0 6	0 6*	0 6*	0 6*
New Kleinfonteins	5 0	5 0	5 0*	5 0*	5 0*	5 0
New Modders	80 3	80 3	75 6	75 9	75 6	75 9*
New Primrose		3 0*	3 0*		3 6†	
New State Areas	33 0	32 6	32 6	32 6	31 9	31 3*
Nigels	8 0†		8 0†		8 0†	
Nourse Mines	14 10½	15 0	14 3*	14 3*	14 0*	
Pretoria Cements	38 6	38 6*	36 6	36 0*	35 9	35 0
Rand Collieries	1 0*	1 0*		1 0	1 0*	1 0*
Rand Nucleus	1 0*	1 0*	1 0*			1 0*
Randfontein Cent.					13 0†	
Randfontein Estates	19 3*	19 3*	19 6	19 1½	19 0	19 0
Rouxville Dmds.	1 0*	1 0*		1 0		
Roberts Victors	5 0	5 6*	7 0	6 0*	7 6†	6 0
Robinson Deep A	31 0*		31 0	31 0	31 0*	31 0*
Robinson Deep B	12 3*	12 3	12 3	12 6*	12 9	12 6*
Roodebergs	3 0*	3 0*	3 0	3 3	3 0*	3 0*
Ryan Nigels	4 0†			4 0†	3 6*	4 0†
Rose Deeps	10 0*					
Shebas		3 0†		2 9†		
Simmer and Jacks	2 10	2 10	2 11	2 10	2 10	2 10*
S.A. Breweries		31 6†	31 6*	31 6†	31 6†	
S.A. Lands	3 1*	3 0*	3 0*	3 0*	3 0*	3 0*
S.A. Reserve Bank	£134*	£136†	£133	£133½*	£134½	£134*
Springs Mines	46 3	46 0*	44 6*	44 6†	43 9*	43 6*
Sub Nigels	10 6*	10 7	10 0	10 3†	9 9*	9 6*
S.A. Alkali	11 0	10 9*		10 3*	10 0†	10 0†
S.A. Townships	10 9*	10 6*		10 6†	10 0*	10 0*
Trans. G M. Estates	—		8 9*	9 0†		
Transvaal Silvers	13 3*	—			14 3	14 3
Union 5 per cent.	£101½*	£102		£101½*	£101½*	£101½*
Van Dyk		1 0*		1 3†	1 3*	1 0
Van Ryn Deeps	68 6	68 0	63 0	63 0*	63 0	61 6
Van Ryn Estates	14 0*	14 9†	12 9*	13 6†	13 6†	13 6†
Village Deeps	12 0*	12 3	11 3*			
West Springs	19 1*	19 3*	19 6	19 6	19 4½	19 0*
West Rand Cons.	5 0†	5 0†		5 0†		
West Rand Estates			2 6*	2 6†	2 6†	2 6†
Witbank Collieries	32 3*	31 6				
Witwatersrands	—	16 6	13 9			—
Wit. Deeps	15 9†	15 0	14 6	13 6	13 0	13 0*
Zaaiplaats Tins	4 6	4 3*	4 0*	4 0*	4 0	

* Buyers. † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

The Importance of the Congo.

Professor [illegible], in his presidential address to the South African Geographical Society, at the Transvaal University on June 27th, dealt largely with Congo problems, and to a considerable degree repeated what has been written in this journal on the Union's ignorance of her Northern neighbours, and the importance of development in progress in that great Belgian colony. It was the want of geographical sense, said Professor [illegible], that had lost Rhodesia to the Union and might bring serious losses in the future. Our natural markets lay to the north and every year new mineral fields were being opened up. When the railway was completed there would be a line from Katanga to the lower Congo and to the port of call. There would also be a line from the Congo mouth to the centre of Southern Africa, five days nearer Europe than Capetown. Johannesburg, the lecturer continued, was the industrial centre of the whole of Africa south of the Equator. There were 250 miles of copper-bearing rock in the Katanga, gold at Kilo, and coal at Sankisia, and uranium containing radium were also found. Big rivers allowed for the establishment of large hydro-electric plants and cheap power. Eventually it would be feasible to send goods to Europe via a Congo port from Johannesburg, Dar-es-Salaam and Kenya. The Belgians would save 3,000 miles in the transport of their copper. The Belgians knew these things and the whole idea was a vast commercial move to make the Congo more and more a paying proposition and to isolate British interests. It was a legitimate trade campaign, but unless we were to be badly beaten in the race for survival, steps must be taken to counteract it. We had our alternative route to the north through the centre of Africa. The attempt to get trade into British channels was at present blocked by the unfortunate squabble about Indians in Kenya colony at a time when the Uasin-Gishu section of the Cape to Cairo railway was being built. If it was possible to get the Government to move they could learn what was happening and by building up business relationships with our neighbours neutralise false steps made by the authorities.

With most of these sentiments we are in entire agreement, but we would like to point out that, although it may be "feasible," no one is ever likely to attempt to send goods from Johannesburg to Europe via a Congo port so long as South Africa's shores are washed by the ocean, and so long as human beings are actuated in their commercial dealings by considerations of economy.

Industry in the Congo: The Panda Works of the Union Minière.

RHODESIAN PROPERTY SALES AND MINING ACTIVITY.

The Star's correspondent at Bulawayo writes: Activity in the Bulawayo property market is shown by yet another big deal. Mr. C. Solomon has bought for £6,000 one of the best situated vacant stands in the town, that abutting on Selborne Avenue and Abercorn Street, directly opposite McPhie's blocks of buildings, which are being completed by the erection of an important corner structure. Mr. Solomon's intention is at once to erect a double-storied building of shops with suites of offices above at a cost of about £20,000. It may be noted that Mr. Solomon is also spending £20,000 on new premises in Salisbury. In addition to several other important recent transfers of property in Bulawayo, some entailing considerable building and rebuilding, there are reports of further attempts at similar transactions. These things are inspired not merely by the improved agricultural prospects as the result of the past good season, but by the extraordinary mining activity, which is declared greater than at any time in the past ten years.

GATOOMA MINING NOTES.

Mr. Milton, Mining Inspector.

Mining men in this district will welcome the appointment of Mr. Cecil Milton to the post of Mining Inspector vice Mr. A. B. Pocklington, deceased. Mr. Milton as Assistant Engineer to "the Goldfields" attained considerable knowledge of the Rhodesian Goldfields which will be invaluable to him and the country he will henceforth serve.

Cam and Motor at the Head of the Output.

The May output for Rhodesia shows the Cam and Motor Mine as the biggest producer in Rhodesia, thus verifying the prediction of Mr. McDermott, at one time manager of the mine, who, when things looked blackest, held that there was a great future for the property. We are satisfied that even this record output will be eclipsed when the Nissen stamps are in action.

Changes on the Cam Staff.

Mr. J. Kearney, underground manager of the Cam and Motor, has been promoted to the managership of the Sabiwa Mine. Mr. Morton, formerly mine captain at the Rezende, takes Mr. Kearney's place at the Cam.

Mr. J. Theal, assistant surveyor, will shortly leave to become surveyor of the Rezende Mine, replacing Mr. Geddes, who has become mine captain.—*The Gatooma Mail.*

WIT. DEEP.

The estimate of results for the month of June, 1923, is as follows: Tons milled, 42,900; gold recovered, 12,276·701 ounces; average of stamps running, 190; stamps' running time, 25·897 days; tube mills, 5. The working expenditure, including head office charges, for the month is £43,396, or 20s. 3d. per ton. The estimated working revenue, based on an estimate of £4 9s. per fine ounce (less 2s. realisation charges), is £53,404, or 24s. 11d. per ton. The net estimated working profit is £10,008, or 4s. 8d. per ton, from which is to be deducted the capital expenditure for the month of £456, leaving a surplus of £9,552.

Position at the Shamva.

REVIEW OF PROFITS, WORKING COSTS AND ORE RESERVES.

During the year ended December 31 last the Shamva Mines dealt with a larger tonnage than in the previous twelve months, and produced 97,154 oz. of gold as compared with 87,115 oz. Owing, however, to the lower prices obtained for its output the value was £9,265 less at £447,822, and consequently the dividend suffered a reduction from 30 to 27½ per cent., while the carry forward was £29,170 lower at £46,621. One very satisfactory feature is the substantial saving effected in the matter of working costs. For 1921 these amounted to 122.50d. per ton whereas for the year under review they were only 107.85d., the principal economies coming under the heads of milling, grinding, and cyaniding. General expenses are higher, but the item of strike expenses which figured in the 1921 profit and loss account has, of course, disappeared. The fall in the price of gold has been more rapid than the reduction in working expenditure, but in regard to the latter the consulting engineer states that further improvements are still expected, especially if railway rates come down and stores continue to decline in cost and consumption. Seeing that stores constitute 50 per cent. of the total expenses, and that the full benefit of a reduction under this head was not felt until the latter half of the year, while railway rates are still 33⅓ per cent. above the pre-war level, there would seem to be good grounds for optimism.

Ore Reserves.

The ore reserves position is disclosed in the usual clear and detailed manner, the tonnage amounting to 2,248,922, as compared with 2,801,022, the value remaining at 3.5 dwt. It is pointed out that owing to the policy adopted a year previously of including a large body of low grade ore the management were unable to add to the reserves to any great extent by development, the large stoping operations, and as stoping proceeds at No. 4 level is expected to provide no additions to the reserves from this source. The governing factor in the large low-grade mine is, as we have before pointed out, the level of working costs, and the management is obviously doing the right thing in concentrating upon the upper levels of the mine for the mill supply and avoiding, as far as possible, drawing ore from the lower levels and thus increasing the cost. By the time it becomes necessary to depend for supplies on the lower levels the additional cost involved may be offset by the all round reduction in expenditure, which the management is making every effort to attain. Here it may be pointed out that favourable results have been obtained from developments at the deeper levels of the mine, though nothing has been added to reserves from these sources pending the results of further work.

The Outlook.

In the report for the quarter to March 31st last, just issued, which brings the position more up to date, the ore reserves show further depletion to 2,152,000 tons, and this notwithstanding a reduction in the tonnage crushed. The company has been unfortunate, as mining operations were seriously affected by heavy rains and an extensive fall of ground in the main open cut. These movements of ground was fully anticipated by the engineer, who stated that "this tendency is rather more likely to increase as time goes on." It will be seen, therefore, how much depends upon developments at depth, as to which shareholders will be pleased to know that the outlook, according to Mr. C. E. Parsons, the consulting engineer, continues to be satisfactory.

Rhodesia's Great Coal Mine: The Wankie Colliery.

De Beer's New Chairman.

We are officially informed that Mr. P. Ross Frames, C.M.G., and the Right Honourable E. S. Montagu, P.C., have been appointed Chairman and Deputy Chairman respectively of the De Beers Consolidated Mines, Ltd. (says the "Diamond Fields Advertiser.") The position of chairman has been vacant since the death of the late Mr. Francis Oats, but Colonel Sir David Harris has acted in that capacity, and has presided at all the annual meetings during that period. Mr. Ross Frames is well known in Kimberley. Born at Port Elizabeth in 1863, he received his early education in Kimberley and at the Lovedale Institute. He served in the G.S.W. African campaign as A.Q.M.G. with the rank of colonel. He is Managing Director of the Premier Mine. His appointment will be a popular one among his many Kimberley friends. The new Deputy Chairman is a comparatively young man, who, however, has played an important part in British parliamentary life. He was Parliamentary Secretary to the Chancellor of the Exchequer 1906-8, Parliamentary Under Secretary of State for India 1910-14, Chancellor of the Duchy of Lancaster 1915, Financial Secretary to the Treasury 1914-15, Minister of Munitions and a member of the War Committee 1916, and Secretary of State for India 1917-22. He is a trustee of the British Museum.

TRADE SECTION.

Week in the Mining Material and Engineering Trades.

JULY BUSINESS STARTS DULLY, BUT FUTURE PROSPECTS HOPEFUL—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—METAL QUOTATIONS.

General.

The beginning of the new financial year leaves much to be desired in respect of general mercantile conditions. Not only have merchants had to deal as they best may with an unsatisfactory year's trading, but most of them have to carry forward a balance on the wrong side of the ledger. The National Bank bomb, although known in commercial circles in its most salient features for some considerable time, has yet in its confessional aspect left an unpleasant atmosphere in commercial circles. The position of the bank is of course, now, after very serious surgical operations, sound, and, coupled with the support of the Union Government and the Bank of England should, under future prudent management, regain stable conditions. The European political situation at the moment is not encouraging, and is causing anxiety in mercantile circles. The majority of commercialists, whose sympathy hitherto has undoubtedly been with France, cannot understand her present Ruhr (*Anglicè* [illegible]) action, and are awaiting pending developments with some anxiety. France at the moment seems actually dictator of Europe as she was from about 1797 to 1815. But Britain, now, as then, it is confidently expected, will be the arbiter. With these dead weights carried forward to our balance sheets, we have said all we can (and should) about liabilities. *Per contra*, as stated previously, there are many items to be entered on the credit side. The commercial community this week, although perturbed by recent occurrences and the political situation overseas, sees the biggest hopes of a steady and satisfactory improvement in general business conditions in South Africa during the next few months. Our industries—gold, coal, diamonds, etc.—will, it is thought, see quite a spurt before the end of the present year; although just at the moment things are not looking too bright, conditions were bound to improve and to become more favourable as the months went by. The building trade shows every sign of moving satisfactorily, and some big contracts are, as a matter of fact, about to be given out. Engineering works are keeping steady, and are anticipating good contracts early on. Foundries are fairly steady, but at the moment not too busy; boiler business activities are just now rather quiet, but are anticipating also better times very shortly. Prices of iron and steel goods remain much about the same, the few fluctuations presently obtaining deserving no mention.

Iron and Steel.

The present month has started none too well, with little business and inquiries offering. The weekly canvass, however, elicited that the feeling among suppliers to the mines was that the next quarter would be better than the past and previous ones. Notwithstanding recent hard knocks, the general opinion is that during the next three months we should see improvement in business conditions

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes about 30s. a ton more; ⅞ and 1 in., 25s.; chequer plates, 27s. 100 lbs.; imported flats, ½ x 3-16, ¾ x ¼, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1¼ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ⅝ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin Lamb and Flag, 2s. 8d. per lb. Phosphor tin, 2s. 10d. per lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4½d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7-16, 10d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in. to 36 in., 10s. 6d. to 11s. 6d.; 42 in., 20s. 6d.; piping, ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 56s. and upwards; barbed wire, "Shortthorn," 69 lb., 13⅜ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per

TIN PROPERTY FOR SALE.

A large Farm close to Potgietersrust, with all mineral rights, on which a considerable amount of prospecting for tin has been done, and brought to the producing stage, together with an up-to-date battery and all necessary concentrating machinery, ready for work.

Owing to illness of the Owner, all work has been stopped.

ABOVE CAN BE OBTAINED AT A LOW FIGURE.

For Particulars Apply to:
W. SONNENBERG, Solicitor,
Box 22, POTGIETERSRUST.

dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, [illegible] per ton of 2,000 lbs.

Iron and Steel Conditions Overseas: Britain.

The French occupation of the Ruhr was the dominating feature of the British iron and steel industry in the first quarter of 1923. At the close of 1922 a slow tendency towards improvement was evident, but this tendency has since been accelerated rapidly as a result of the conditions in the competitive cross-Channel industry.

Quotations.

Pig Iron.—Cleveland, Foundry No. 1, 130s.; No. 3, 122s. 6d.; No. 4 forge, 115s.; mottled, 110s.; hematite, mixed Nos., 122s. 6d. Finished iron and steel.—Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £9 10s.; hard, £10 10s.; bars and angles, £10; tees, £11; joists and channels, £10 5s.; sheets, singles, £14 10s.; doubles, £15; lattens, £15 15s.; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots; mild steel fencing, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ⅕ cwt. coils, 7-ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 21s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 24s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 21s. per cwt. Bolts and nuts, 50 per cent. discount.

America.

The logic of the economic situation of the United States at the present time indicates clearly that there should be a large outflow of capital from America for years to come, and that if wisely directed this export of capital should prove highly beneficial to the States. Among factors in operation to induce the outflow of American capital may be mentioned: The United States is now the world's chief source of floating as well as of fixed capital. The United States has reached the stage in its economic development at which a portion of its capital savings can profitably be exported. The development of many manufacturing industries has reached the point at which, if these industries are to be fully and efficiently operated, a certain proportion must be exported regularly. The manufacturing industry of the United States has, moreover, become so extensive and diversified that it must draw increasingly upon foreign countries for a wide range of materials. America's foreign loans, including the Allied debt, and its foreign investments are now so large that the interest and amortisation, on the one hand, and the dividends, on the other, aggregate huge sums which, if paid directly in goods, will greatly increase competition in the home market. Exports of iron and steel products during March, 1923, amounted to 165,624 long tons, an increase of 23 per cent. over those of February and of 35 per cent. over January. Outstanding gains in the March exports over those of the previous month were made in steel rails (8,056 tons), structural shops (3,830 tons), ingots, blooms, billets, sheet bars and skelp (3,682 tons), galvanised sheets (1,992 tons), plain wire (1,524 tons), scrap (1,519 tons), tin plate, terne plate, etc. (1,421 tons), barbed wire and woven wire fencing (1,417 tons), iron and steel plates (1,395 tons), and wire rods (1,026 tons). Shipments of iron and steel to foreign countries during the first quarter of 1923 totalled 425,250 tons, which is 16 per cent. under the exportation for the corresponding period of last year—508,070 tons.

France.

The Ruhr situation shows no important change. During March the Saar coal production amounted to approximately 3,000,000 tons, and it is reported that the April total increased over March. Large imports of British coal continue. British coke prices are lower, but the quality of deliveries is being criticised, and several cargoes of American coke which have arrived were said to be in bad condition. Prices of blast furnace coke, distributed by the Société de Coke des Hauts-Tourneaux, are unchanged; but the percentage delivered at local requirement prices (198 francs per ton) is expected to be increased from 20 per cent. to 38 per cent. French coke production is slowly rising and new ovens are being started. Imports from the Ruhr are irregular in volume, but now average about 6,000 tons daily. Pig iron production during March totalled 316,000 tons (305,000 tons in February and 426,000 tons in January); steel ingots and castings, 315,000 tons (289,000 tons in February and 407,500 tons in January). Prices of iron and steel are from 15 to 30 per cent. off on various products, but continued reduction is considered unlikely.

Germany.

The business outlook in Germany is now more serious than at any time since the armistice. The rise in domestic prices and the stoppage of trade in the Rhineland have combined to bring about an increasing industrial stagnation. Production is declining, unemployment and labour disputes are growing in importance. The Government support of the mark has met with indifferent success; while the rise in the discount rate of the Reichsbank from 12 to 18 per cent. has failed to check the speculation at which it was aimed. Currency inflation continues, and the Reichsbank is marketing large quantities of Treasury bills.

The stagnation of industry in the occupied area continues; coal production having practically ceased, and the metallurgical, chemical and dye production being greatly cut down. Chemicals and dyes have declined over 50 per cent. All unemployment crises have been avoided thus far by the institution of repair and extension work in various plants, particularly coal mines; this has been financed largely by the Government.

There is continued agitation against foreign trade control, which has resulted in the reduction of some export taxes; but industry continues to complain that world market prices have been reached. According to the price index of the *Berliner Tageblaat*, the general level in April was 125 per cent. of the 1914 gold price level; this means that, considering the rise in world gold prices since 1914, the average world prices have not yet been reached. Certain industries, however, have of course reached and surpassed this point.

Hamburg entrances during April amounted to 1,165 ships, aggregating 1,319,000 registered tons. Clearances came to 1,438 ships, of 1,321,000 tons.

Second-hand Machinery.

There has been a better tone in the second-hand market this week and inquiries are still coming in from outside sources, especially for small batteries and recovery plants. There is, however, a scarcity also of these. What are obtainable just now are, it is regrettable to state, being sold by several syndicates which started work some few months ago with small capitals anticipating, no doubt, being able to pay their way as they went along; but the inevitable, unfortunately, seems to have overtaken them—insufficient capital to tide over any little unforeseen difficulty—and they are now compelled to realise plant in order to pay off what debts they have incurred. These are practically the only small mills which are knocking about at present. There are a few up-country, but the cost of bringing them down here induces persons about starting small propositions to prefer the Rand and its facilities. In conversation this week with a leading second-hand machinery dealer, he was not backward in his opinion that the Government should undoubtedly investigate the affairs of these small syndicates and assist them in every possible way to tide over any immediate difficulties. This would, in his opinion, not only bring in a small revenue to the Government, but at the same time give work to many out-of-works, and solve the problem of unemployment in a better way than is presently being pursued. There are at the present time several small propositions on the Rand which are proving themselves by results and showing good values, but, as stated, these mistakes in lack of capital to put down the requisite plant to recover in full all that the proposition produces. Many that are working now have not a full plant, and are only recovering possibly a half of the gold the mine produces, the rest going into the tailings and the [illegible] having sufficient money to buy bigger plants, and the working costs eating up what is really being recovered. There are [illegible] propositions south of the Main Reef Series [illegible] that are going up to 10 dwts. per ton and [illegible], which would be all worked if the Government would only [illegible] freehold and [illegible]. This would make business lively on [illegible], and there need not be so much [illegible] poverty that is now existing amongst not only the so-called lower classes, but the better classes. The prospects offered to the mining man and those who have a little money are better on the Rand than in any part of the world. If only the Government [illegible] facilities in opening up new fields of [illegible], there is no necessity for poverty or unemployment. As stated previously, there is a big scarcity of second-hand material for mine spares, and what little was offered a few days ago has been snapped up by several dealers and sold again and resold to those companies which are clamouring for spares. In fact, the mines now will buy spares whenever obtainable and not as in the past, when [illegible] orders were [illegible], so that second-hand dealers did not have much business with the majority of the mines for battery spares particularly. Dealers, in common with others, are looking forward to better times and hope to see them shortly.

Timber and Building Materials.

Timber merchants report business as quite satisfactory, with fairly good stocks, excepting some sizes of scantlings, which are scarce, and flooring.

Building operations are good and contractors are looking forward to big things soon. The prices of bricks remain as before.

Timber Prices: 3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3½d.; flooring, 6d. to 6½d.; ceilings, 4d. to 4½d.; Oregon, 7s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8d. to 9d., very firm. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d., 1½ in., 11d., 2 in., 1s. at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube at coast; Rhodesian mahogany, 9s. per cubic foot at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 3d. to 1s. 4d. per foot of 1 x 12, here; American pine shelving, 9d. per foot; 3-ply wood, 3mm. up to 5 mm., alder and birch, 4½d. to 6½d. per sq. foot; oak and teak 3-ply, 10½d. per sq. foot.

Brick Prices, etc.: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s. to £5, and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 6s.; 15 in., 7s. 6d.; 18 in., 9s.; dry red oxide, 14s. per 100 lb.; white lime, 7s.; [illegible] plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d.; [illegible] and roofing, 30s. to 54s. for 1 to 3 ply.

Latest Metal Quotations.—London, July 2: Standard copper, £64 12s. 6d. cash; £65 2s. 6d. three months; electrolytic copper, £71 10s. [illegible]; £72 [illegible]; copper bars, £72; standard tin, £176 17s. 6d. cash, £178 three months; foreign lead, £23 17s. 6d. prompt, £23 7s. 6d. forward; quicksilver, £10 10s. per bottle; bar silver, 30⅞d.; fine gold, 90s. per ounce.

NEW ELAND DIAMONDS.

Washing operations for June, 1923: Loads washed, 14,202; yielding 3,732 carats.

NEW CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs for the month of June, 1923, of the undermentioned companies of the New Consolidated Gold Fields Group:

Company	Stamps Running	Tube Mills Working	Tons Crushed	Yield in Fine Ozs.	Total Revenue [illegible]
Simmer and Jack	320	7	64,300	13,866	75,016
Robinson Deep	180	10	73,500	23,606	36,353
Sub Nigel	30	2	9,800	5,827	6,258
Totals	530	19	147,600	43,299	£117,627

The revenue derived from gold for the month of June is calculated at the rate of £4 9s. per fine ounce, less estimated gold realisation and exchange charges of 2s. 6d., or a net figure of £4 6s. 6d. per fine ounce.

Simmer and Jack Proprietary Mines.—In addition to above results, 172 ounces of fine gold were recovered from tube mill plates, which have been replaced by corduroy tables.

Total gold in reserve (fine ounces): Simmer and Jack, 716; Robinson Deep, 3,316; Sub Nigel, 1,775; total 5,807.

Cape Explosives Works, Ltd.

INCORPORATED UNDER THE COMPANIES ACT, 1892
(PROVINCE OF THE CAPE OF GOOD HOPE).

7½ Per Cent. First Mortgage Debenture Stock.

NOTICE IS HEREBY GIVEN by Cape Explosives Works, Limited, to the holders of the above-mentioned Stock of the intention of Cape Explosives Works, Limited, to redeem the said Stock on the first day of January, 1924.

The principal moneys secured by the said Stock, together with a premium at the rate of £3 per cent. thereon, will become payable on the date above specified.

This notice is given in pursuance of the provisions contained in the Trust Deed of the 5th July, 1921, securing the above Stock and in the conditions endorsed on the Stock certificates.

The arrangement for the surrender of Stock certificates against payment of the redemption moneys will be announced at a later date.

The Directors of the Company contemplate the creation of a new Debenture Stock and the offer of an opportunity to the holders of the abovementioned £7 10s. 0d. per cent. First Mortgage Debenture Stock to exchange their holding in lieu of accepting the redemption moneys. A further announcement will be made in due course.

By Order of the Board.

A. V. DRAKE,
Assistant Secretary

Kimberley,
28th June, 1923.

Glynn's Lydenburg New Lease of Life—Transvaal Chrome Iron—
New State's Reduction Works—Oil Prospects.

Industries The South African Commerce
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Finance Established 1891. Transport

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Rhodesia's Greatest Gold and Asbestos Mines.

The Shamva Gold Mine: A view taken from the top of the hill.
The annual report of the company was reviewed in our last issue.

Shabani Asbestos Mine: Open Workings. The Shabani Mine belongs to the Rhodesia and General Asbestos Corporation, and is regarded as the show mine of the district.

The Largest Gyratory Crusher
made in Great Britain.

Weight: 80 tons, Height: 17ft. 2in.
WAS BUILT BY

Edgar Allen & Co., Limited
Imperial Steel Works,
Sheffield

HEAD OFFICE FOR SOUTH AFRICA
EDGAR ALLEN & CO. (South Africa), LTD.,
3 and 4, New Club Buildings —— P.O. Box 551
JOHANNESBURG.

Glynn's Lydenburg Turns the Corner.

NEW SOURCE OF ORE SUPPLY IN WERF MYNPACHT—SIGNIFICANCE OF REEF STRIKE IN CIRCULAR SHAFT.

The official announcement of the striking of reef going 17 1 dwt. over 10.1in in the vertical circular shaft on the Werf Mynpacht of the Glynn's Lydenburg property this week puts a new and healthier complexion on the prospects of the company. It will be remembered that the Compound Hill Mine has been supplying ore to the mill pending development in the vicinity of the south shaft sufficient to enable mining operations to be transferred to the latter section. In his speech at the annual meeting last December, the Chairman, Mr. Max Honnet, pointed out that development work south of the Werf Mynpacht towards the new circular shaft, continues in payable ore. Attention had been concentrated on the southward extension of the drives to effect connection with the shaft, but such work as had been done towards the west had shown that payable ore still continued in that direction, so that they had excellent prospects of opening up a good mine in the large block of claims south of the Werf Mynpacht. A large additional claim area was pegged during the year, principally towards the south and west of the Werf Mynpacht mine, the object being to secure the extension of the mine in those directions as development proceeded from the new shaft and the main drives south. Further investigation of much of the new ground pegged remained to be carried out.

In regard to the new circular shaft, which was then, as now, a most important feature, the Chairman on the same occasion explained that good progress was made in the earlier stages of sinking, which started at the beginning of last year. About the middle of May, however, the shaft ran into water and bad ground, and these difficulties, accentuated by a shortage of power, had seriously retarded progress . In order to deal adequately with the troubles encountered, and to get the shaft down to the reef as soon as possible, it became necessary to instal additional and more powerful pumps, and also to render the whole equipment independent of the uncertain electric power supply by the erection of steam plant. Up to date, the shaft had been sunk and lined with concrete to a depth of 269 feet, and now that the new equipment was ready, it was expected that the water would be pumped out of the shaft and sinking operations resumed forthwith. The distance remaining to be sunk to the reef horizon was approximately 140 feet, and those in charge of the work confidently anticipated that this task would be completed within the three months.

Shaft Sinking Difficulties.

"Past experience," said the Chairman, "with shafts sunk to any considerable depth in soft ground in the Lydenburg District has been unfortunate, and our own efforts, first with the Osborne incline shaft, and now with the vertical circular shaft, have proved no exception. The difficulties encountered have naturally added very considerably to the cost of the shaft, which, including equipment, etc., amounts to just about £20,000 up to date, or about £1,500 short of the total amount of profit earned since November last year, when the preliminary work on the shaft was commenced. When referring to this shaft at last year's meeting, I stated that bad conditions might be found, and warned you that we should be prepared to meet heavier expenditure than that indicated at the time. Our estimate, based on favourable conditions, has been badly upset by the adverse conditions actually met, the main items constituting the excess expenditure being pumps (which had been excluded from the original estimate pending knowledge of the quantity of water to be handled), boiler plant and [illegible] necessitated by lack of electric power, quarters and road making, etc., while the slow progress made during the last few months has added heavily to the wages bill. So far as can be seen, no further equipment of any importance is likely to be required, and the expense still to be incurred will probably be limited to the cost of sinking the shaft to its estimated depth and constructing the station, which it is hoped will not involve any large outlay of money. Incidentally, I may say we expect to be able to reduce the total cost of the shaft somewhat by selling portions of the sinking equipment when the work is completed.

The Turning Point.

What the announcement of this week means is best illustrated by the following passage in the Chairman's speech on the same occasion: "The company," he said, "has reached a turning point in its career. Our present mines, which hitherto have served us well, are within measurable distance of exhaustion, and if our undertaking is to continue in existence in the future we must take steps now to provide new sources of ore supply. The consequent call upon our resources necessarily involves some sacrifice and patience on the part of shareholders during the transition stage, but, as I have pointed out, our prospects in the Werf Mynpacht extension are very encouraging, and I am hopeful that the time is not very far distant when we shall have developed that mine sufficiently to warrant the resumption of dividends with reasonably good prospects of a prosperous life ahead of us."

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South Africa and the Petroleum Problem.

THE WORLD'S GREAT INDUSTRIAL QUESTION—RISE AND PRESENT POSITION OF THE PETROLEUM INDUSTRY—THE RIDDLE OF THE FUTURE.

[illegible] petroleum to-day, it [illegible] the [illegible] questions [illegible] thinking [illegible] a good deal of [illegible]. In this [illegible] at the beginning of his address to the members of the American Petroleum Institute at their annual meeting in November, 1920, Mr. Walter C. Teagle, President of the Standard Oil Company (New Jersey), put his finger [illegible] upon the most vital point of the world's industrial system. The [illegible] of petroleum as [illegible] of motive energy and lubricating oils [illegible] during the last two decades [illegible] the control of [illegible] likely to develop into a [illegible] and different international position.

The story of the petroleum industry, as we are told by George Otis Smith, Director of the United States Geological Survey, carries back only sixty years. On August 27th, 1859, oil was struck in the Drake well, near Titusville, in North-western Pennsylvania, and when the pumping began the oil flowed as a tiny stream of 10 barrels and later of only 15 barrels a day, but since that day of small things the tale of oil has mounted higher and higher; 5 million barrels were produced in 1870, 26 million in 1880, 45 million in 1890, 63 million in 1900, 209 million in 1910, nearly 695 million in 1920, and 851 million odd in 1922. These figures are stupendous, but still more stupendous is the ever-increasing consumption of this product. In the United States the demand has so far outstripped the supply that a large importation of petroleum has for some years past been obtained from Mexico.

Estimated Production.

The following estimate of the world's petroleum production in 1921 and 1922 has been made by the American Petroleum Institute:—

	Thousand Barrels.	
	1922.	1921.
United States	551,197	472,183
Mexico	185,057	193,397
Russia	35,091	29,150
Persia	21,154	16,672
Dutch East Indies	16,000	16,958
Roumania	9,817	8,368
India	7,980	8,000
Peru	5,332	3,699
Poland (Galicia)	5,110	5,167
Sarawak	2,915	1,411
Argentina	2,674	1,747
Trinidad	2,445	2,354
Venezuela	2,335	1,433
Japan and Formosa	2,004	2,447
Egypt	1,188	1,255
France	491	392
Colombia	323	—
Germany	200	200
Canada	179	190
Italy	31	34
Algeria	6	2
Others	5	2
Total	851,540	765,065

It will be seen from these figures that the United States contributed 64·7 per cent. and Mexico 21·7 per cent. of the total production, or nearly 87 per cent. between them. There are large stores of petroleum in other parts of the world, but some years of work and large capital expenditure will be required in order to bring their combined outputs within measurable distance of that of these two American countries. The capital employed in the industry in the United States alone is roughly £1,600,000,000.

A Precarious Position.

A vivid light is thrown upon the present condition of the petroleum business by a simple analysis of the domestic production of the States during the month of September last, for instance, such as was given last year by Mr. A. C. Bedford, the well-known Standard Oil chairman, at a meeting of the American Petroleum Institute which was held at St. Louis. He gave it as an apt illustration of the fact that what would be an abnormality in other business is normal in the petroleum industry.

"In that month there were approximately 275,000 oil wells in the United States, and they produced a daily average of 1,503,000 barrels of oil, or 5·46 barrels per well per day. However, slightly more than 50 per cent. of this total production, that is to say, 779,423 barrels of oil, was being produced from only 7,097 wells, or 2·58 per cent. of the total number of oil wells in the United States. Furthermore, one third of the production of the United States in September was coming from 2,795 wells, or 1·02 per cent. of the total number of oil wells. It will thus be seen that if there were any arbitrary power in the oil industry whereby 1 per cent. of the total number of producing wells could be shut off, we would be in the midst of the most profound oil shortage ever experienced in the history of the world. If the drilling operations represented by this 1 per cent. had been unsuccessful, the price of oil would be much higher than it is to-day, because it would be governed by the cost of production of producers with much higher costs."

The United State's Petroleum Assets.

The precarious position of the world's most colossal industry is still more strikingly exhibited in a report upon the oil supply of the United States, which was prepared by leading oil geologists for the Government and published by the United States Geological Survey, Department of the Interior on January 17th of last year, in which it is stated, *inter alia*, that: "A review of the producing, probable, and possible oil-bearing regions in the United States by a joint committee composed of members of the American Association of Petroleum Geologists and of the United States Geological Survey has resulted in an inventory estimate that 9 billion barrels of oil recoverable by methods now in use remained in the ground in this country, January 1, 1922. Unlike our reserves of coal, iron and copper, which are so large that apprehension of their early exhaustion is not justified, the oil reserves of the country, as the public has frequently been warned, appear adequate to supply the demand for only a limited number of years. The annual production of the country is now almost half a billion barrels, but the annual consumption, already well beyond the half-billion mark, is still growing. For some years we have had to import oil, and, with the growth in demand, our dependence on foreign oil has become steadily greater, in spite of our own increase in output. It is therefore evident that the people of the United States should be informed as fully as possible as to the reserves now left in this country, for without such information we cannot appraise our probable dependence upon foreign supplies of oil, on the expanding use of which so much of modern civilisation depends. Fortunately, estimates of our oil reserves can be made with far greater completeness and accuracy than ever before. During the last eight years a large part of the territory in the United States that may possibly contain oil has been studied in great detail by oil geologists; wildcatting has spread through 'prospective' into many regions of 'possible' and locally even into regions of 'impossible' territory, old fields have been definitely outlined and new ones discovered; and, finally, improvement in methods and special training in the calculation of oil reserves and of the depletion of oil properties have been developed to meet the requirements of the tax laws. Accordingly, in order that the public may get the fullest benefit of this newly available information, the United States Geological Survey in March, 1921, invited the American Association of Petroleum Geologists to co-operate with it in a review of the producing, probable, and possible oil territory of the United States and in the compilation of an estimate of the petroleum remaining in the ground and recoverable by present methods."

The result of the investigation was that the estimated reserves are enough to satisfy the present requirements of the United States for only twenty years, if the oil could be taken out as fast as it is wanted. Since this is scarcely possible, owing to the increasing difficulty of draining the oil from deposits which are being steadily impoverished, it is evident that the oil problem is one that will inevitably assert itself very emphatically within a very few years, and may begin to do so at any moment.

Will South Africa be able to do anything towards a solution of it? That is the question that the writer proposes to discuss in some subsequent articles.

Mining Men and Matters.

On Saturday last Messrs. H. P. Fraser (Business Manager) and A. D. Jansen (Chief Surveyor) severed their connection with the E.R.P.M. after approximately 30 years' service in one case and 21 years' service in the other. Both gentlemen were given a hearty send-off by the General Manager and Staff of the E.R.P.M.

* * *

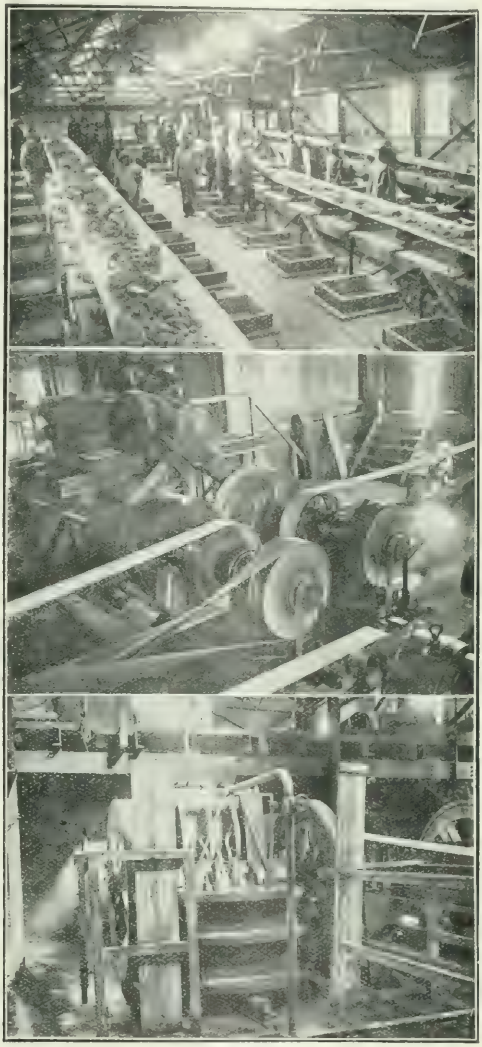
Mr. G. F. Wills, well-known throughout the Union of South Africa and Rhodesia, having decided to retire from the active management, has resigned his position as Managing Director of Edgar Allen and Company (South Africa), Limited. Mr. Wills has been the Company's local representative for many years, and also that of the Metropolitan Carriage, Wagon and Finance Company, Limited, and its associated Companies. Mr. Wills will retain his interest in, and a seat on the Board of, Edgar Allen and Company (South Africa), Limited. We understand that Major D. Wauchope, M.B.E., who is also well known, and who has been associated in business with Mr. Wills, has been appointed a Director of the Company and successor to Mr. Wills in general management. Mr C F Lucas has also been elected a Director.

Tenders Recently Adopted and Recommended by Johannesburg Town Council.

Adopted: South African General Electric Co., Ltd., for two latest model Dodge cars at £351 each; total, £702. Reid Bros. (S.A.), Ltd.: 1 motor-driven lathe, for £587 10s. Bentle and Co., Ltd., for 100 special meter boxes at £3 17s. 6d. each; £387 10s. Gilbert Hamer and Co., Ltd.: Channel steel, £122 4s. 11d..

Recommended: The Griffin Engineering Co., Ltd., for one air compressor and receiver, complete, £1,209. Hubert Davies and Co., Ltd.: 1,500 10-ampere meters at 21s. 9d. each; £1,631 5s. Rice and Diethelm, Ltd.: 100 do. at 49s. 6d.; £247 10s. The Telegraph Manufacturing Co., Ltd., for five miles trolley wire, £636 5s. Blane and Co., Ltd., for 34,000 lbs. coach screws, £501 10s. The Telegraph Manufacturing Co., Ltd., for iron cable, etc., £8,642 17s. 6d. Blane and Co., Ltd., for two transformers and set of spare coils, £378. Rice and Diethelm, Ltd., for ten transformers and spares, £1,883 5s. C. Kleudgen, Ltd., water meters, £329 18s. 6d. The Griffin Engineering Co., Ltd., for air compressor and receiver, etc., £1,209. Bell and Gifford, one steam wagon, complete, £1,325.

New State's Reduction Works.



The above views of the reduction works at the New State Mines were taken for the "S.A.M. & E.J." last week. The top picture shows the sorting and crusher house; the one below, the fine crushers; and the bottom picture, the coarse crushers at work. The New State announced its first output this week for the month of June.

ZAAIPLAATS TIN.

The results for the month of June, 1923, are as follows: The output for the month, including tributors, was 27 long tons, averaging approximately 73 per cent. metallic tin. The estimated profit for the month, on a basis of £180 for metal, was £1,805. The outlook for July is satisfactory.

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WITH AGENTS THROUGHOUT SOUTH AFRICA

The Chrome Iron Deposits of the Transvaal.

DEMAND EXCEEDING SUPPLY—SOME USES DESCRIBED—RUSTENBURG AND OTHER OCCURRENCES.

The demand for chromic acid since the great war has far outdistanced the supplies of high grade ore available for manufacturing purposes. A tremendous impetus has thus been afforded towards the opening up of new and promising discoveries in many countries; the net result has been to direct attention not only to possible new fields but also to a resurvey of many ore deposits already known, with a view towards a more careful analysis of the acid contents of the ores which might result in bringing them into the region of payability. As is well known, the method of payment for chrome ores is on the unit basis. The limiting unit varies somewhat in different countries and depends in large measure on the special needs of manufacturers as well as on the cost of extraction of the chrome contents of the ore. Generally a fair average unit basis may be taken at 42 per cent. chromic acid, for which a minimum basic payment is made, and each successive unit is paid for on an ascending scale. With a market value to-day of about £6 per ton, the mineral is payable from the point of view of export from the Union. Hence the renewed activity of prospectors and others in the chrome ore regions.

Mode of Occurrence.

The usual form in which chrome iron occurs in the Union is that of the oxide. This is usually a dark brown or black in colour; very crystalline, sometimes coarsely so, and at other times microcrystalline in texture. Its weight over 7 and its colour always draw attention to its existence in nature, and very frequently weathering causes the disintegration of rock masses when near the surface, with consequent dispersion of minute crystals in the sand or soil. Occasionally one meets with the carbonate of green colour—often mistaken for nickel by men inexperienced in the detection of chrome iron. A simple test with the blowpipe will, however, show the essential difference between the two mineral forms. Besides, nickel is nearly always associated with cobalt, while this is not the case with chrome iron.

Stainless Steel.

Amongst the important discoveries of British metallurgists during the great war was that of stainless steel. It is to-day common knowledge that the addition of a definite quantity of chromium to ordinary steel in process of manufacture will not only add to its hardness but will also give a steel which does not oxidise on exposure to the atmosphere; more, it will not rust nor become stained by weak acids such as vinegar. One immediate result of this was the manufacture of stainless and rust-resisting cutlery. This new invention has found its way into every country in the world and stainless cutlery is now quite well known to the ordinary housewife, doubtless with much relief from the ever-pervading anxiety as to whether "Jim Fish" has faithfully performed his duty of removing discolourations from the domestic cutlery. But it is not this special manufacture which has caused the demand for chrome ores to leap upwards. Much more important from the mining point of view is the fact that now the invention is being applied to all sorts of processes of steel manufacture where exposure to atmospheric influences causes the steel structure to deteriorate. There are now on the market rustless steel pipes for water and steam purposes, structural beams for buildings of the sky scraper variety, as well as for posts, perpendiculars, etc., used in ordinary steel structural work. It is quite clear that we shall soon see the process universally applied to all forms of steel structural work where exposure to the elements or to acids will make for inefficiency or more rapid deterioration of structures made of ordinary steel. One has only to consider for a moment the possible enormous saving in the paint bills of railway companies whose bridges, etc., will in future be built of stainless steel, to realise the immense possibilities of this new process from the points of durability and economy in maintenance. The slight extra cost of the new steel will not debar its use on a large scale. The reason for the renewed interest in chrome ore deposits is now apparent, and prospectors and miners in the Union would do well to direct attention to this subject.

Rustenburg Deposits.

The Rustenburg district is well known for its chrome ores. They all lie very close to the surface and at some distance from the railway lines. They are therefore not easily reached and the question of transport over the so-called roads is one of some moment, especially in the rainy season. These deposits lie in layers between successive sheets of lava formation, and in some cases the layers number three or even more, with a thickness of from 10 inches to 2 feet, and with [illegible] of from 2 feet to 5 feet. The angle of dip is about 5 degrees north, and the strike east and west. Very little work has hitherto been done on the properties. At present a small development syndicate is opening up a promising lode about 20 miles from Rustenburg. Analyses of certain samples from this area gave up to 45 per cent. chromium, and this at to-day's prices makes it a profitable mining venture. A very large area is actually covered by the lode, somewhere in the neighbourhood of 600 morgen at least on one farm is known to contain chrome iron, and there are other large areas awaiting development in this district.

Typical Open Workings in a Chrome Iron Mine.

Other Occurrences.

In the Lydenburg district three separate deposits are known to exist. All these are on private farms and two of them are in the market at reasonable prices. These occurrences dip at high angles, from 40 degrees to 55 degrees on one farm where the lode is exposed. The ore body runs [illegible] about three miles east and west and the dip [illegible]. In these seams the average thickness of the layers of chrome ore in the [illegible] formation is 12 inches, and they are separated by [illegible] to 2 feet of [illegible]. One [illegible] outcrop shows four distinct layers of chromite with a combined thickness of 3½ feet. This deposit lies on a farm [illegible] the new railway extension from Lydenburg and [illegible] from transport difficulties. A [illegible] chrome deposit exists in the [illegible] district, near the Olifants River. Here the [illegible] may be seen on the surface. The chromite lies along some low hills and outcrops over considerable areas. No work [illegible] has been done on these [illegible], probably on account of the general unhealthiness of the district for a considerable portion of the year. Malarial fever is very prevalent and this tends to damp the ardour of the average prospector. Moreover, the distance from the railway, about [illegible] miles, makes it unprofitable as a working proposition. Small deposits have been reported from two farms in the Waterberg district, and samples of good-looking ore have been brought to Johannesburg by the owners. Here, again, inaccessibility and the fact that no development has been done on the properties makes them of doubtful value to-day.

It will be seen from the above sketch that chrome ores exist in several districts of the Transvaal, and that some of them at any rate are quite equal to the average Rhodesian ores. Efforts should be made to open up these ore bodies and so to provide work for some at least of our army of unemployed in the Transvaal, besides creating in this manner a new industry in the Union.

SELECTED NEW PATENTS.

[illegible], 223 Anderson Street, Johannesburg.—Improvements in lubricators.

Sidney Talbot Langdon, New State Areas, Ltd., Box 41, Springs.—A combined longitudinal seam-closing and corrugating machine for piping made from galvanised iron.

Christopher North Cardinal, c/o P.O. Box 668, Johannesburg, Transvaal.—Improvements in rotary engines.

John Charles M[illegible], c/o P.O. Box 3146, Johannesburg.—Improved instrument or device for testing and gauging [illegible], rock drilling machine bits, and the like.

The [illegible] Wheel (Patent Syndicate), Ltd., [illegible] Buildings, Smith Street, Durban, Natal.—Improvements relating to axles for railway and like vehicles.

[illegible] Watson Jamieson, Kimberley, Cape Province.—Process for the manufacture of fuel briquettes from town rubbish.

Latest Metal Quotations.

London, July 9.—Standard copper, £65 cash, £65 12s. 6d. three months; electrolytic copper, £72 5s. seller's option, £72 15s. buyer's option; copper bars, £72 15s.; standard tin, £181 7s. 6d. cash, £182 12s. 6d. three months; foreign lead, £24 2s. 6d. prompt, £23 12s. 6d. forward; quicksilver £10 10s. per bottle; bar silver, 31¼d.; bar gold, 90s. 4d. per ounce.

TIN PROPERTY FOR SALE.

A large Farm close to Potgietersrust, with all mineral rights, on which a considerable amount of prospecting for tin has been done, and brought to the producing stage, together with an up-to-date battery and all necessary concentrating machinery, ready for work.

Owing to illness of the Owner, all work has been stopped.

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Box 22, POTGIETERSRUST.

June Output.

31,255 OUNCES DOWN.

Owing to the reduced native labour supply, the shorter working month, and the accident at the Consolidated Main Reef, the Transvaal June gold output is 31,255 ounces less than that for May.

Chief Figures.

The salient figures are:

Total output for June	755,309 ozs
Decrease on May	31,255 ozs
Witwatersrand output	735,993 ozs
Decrease on May	31,756 ozs
Outside Districts output	19,316 ozs
Increase on May	501 ozs
June value	£3,361,125
Decrease on May	£119,420

Individual Returns.

		Increase	Decrease
Aurora West	3,352	—	95
Brakpan Mines	27,468	601	—
City Deep	37,868	—	3,333
Durban Deep	10,591	—	378
E.R.P.M.	31,400	—	1,092
Geduld Deep	23,582	1,207	—
Ferreira Deep	8,685	—	142
Geldenhuis Deep	14,257	255	—
Government Areas ..	62,135	—	2,460
Knight Central	5,622	—	1,674
Luipaardsvlei	4,757		305
Meyer and Charlton	8,440	—	256
Modder B.	31,266	—	1,537
Modder Deep	23,423		605
Modder East	12,322	559	—
New Kleinfontein	11,290	160	—
New Modder ..	53,902	—	3,819
New Primrose	4,393	—	342
New Unified	2,220	—	202
Nourse Mines	14,712	—	830
Randfontein	50,870	—	1,985
Robinson	3,804	108	
Robinson Deep	23,606	—	1,293
Rose Deep	13,088		199
Simmer and Jack	13,866	—	500
Springs Mines	23,361		1,555
Van Ryn Estate	8,360	—	1,089
Van Ryn Deep	27,158	—	1,181
Village Deep	16,904		569
West Rand Cons.	9,626	—	440
Witwatersrand	11,216	—	812
Wit. Deep	12,277	—	179
Wolhuter	7,802	—	596
Crown Mines	68,484		1,427
Langlaagte Estate	28,419		1,939
New Goch ...	4,064		331
Cons. Main Reef	14,462	—	5,373
New State Areas	1,768	1,768	-
Miscellaneous	1,666		1,381

Outside Districts.

		Increase	Decrease
Sub Nigel	5,827	28	—
Glynn's Lydenburg	1,450	100	-
Transvaal G.M. Estates ...	5,739	3	—
Miscellaneous	6,300	370	

Native Labour.

The returns supplied by the Witwatersrand Native Labour Association show the following results:—

	June	May.
On gold mines ...	170,865	175,591
On coal mines	15,598	15,176
On diamond mines	3,063	2,668
Totals	189,526	193,435

The Ventilation of Development Ends.

By R. A. H. Flugge de Smidt, Dust Inspector, Modder Deep.

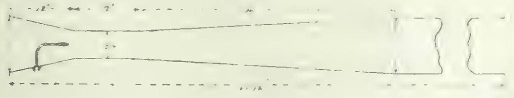
There are two methods of ventilating development ends:—(a) By blowing in air, (b) by exhausting air. In order to understand the fundamental difference between the two methods, let us consider two simple experiments.

I. Imagine a beaker full of liquid, the bottom layer of which is coloured and the rest colourless, say, water. By introducing a tube reaching to the bottom and drawing liquid from the beaker the coloured portion can be entirely extracted before much mixture has taken place. Repeating the experiment, but if instead of drawing off liquid, we were to cause water to flow in through the tube, the liquids would mix and overflow and a very large volume would have to be introduced before the liquid in the beaker became colourless.

For the above analogy the writer is indebted to Mr. H. J. Ireland.

The connection between a development end and the exhaust or blow-in method of ventilation is obvious.

II. A conduit 27 ft. in length, made of 11 in. galvanised iron piping, was set up in a X-cut, in which no work was taking place. Near the intake end the conduit contained a jet with a ¼ in. nozzle blowing off compressed air at 76 lbs. pressure—i.e., releasing 80 cubic feet per minute. At the delivery end, which was 100 ft. from the face, a 4 in. anemometer registered 2,875, the necessary correction giving a velocity of 2,595 ft. per minute, a volume of 1,710 cubic feet per minute. The gust produced was so strong as to blow out a candle at a distance of 35 feet from the delivery end, at 50 feet it was still effective, while at 60 feet the air motion as tested by means of smoke was still noticeable.



— Sketch of "Venturi Booster" —

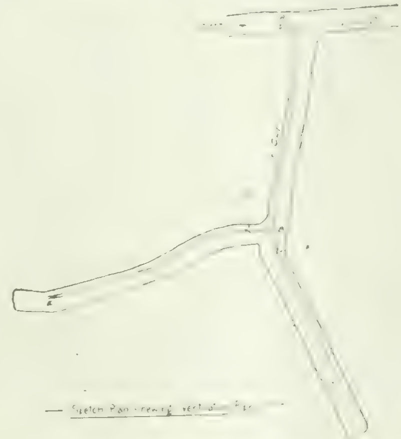
At the intake end the anemometer reading was still greater, being 3,600, giving a velocity of 3,241 feet per minute (to calculate the volume allowance must be made for contraction) and yet the suction effect as tested by smoke was not apparent for more than 3 feet from the intake. The air returning from the X-cut slipped round into the intake end of the piping.

The above experiment was carried out by the writer on Modder Deep, and confutes the theory propounded by a certain expert as to the suction effect of air when exhausted at a considerable velocity. Deductions made from those two experiments will enable one to tackle any given problem.

The Exhaust Method.

Where development ends attain a considerable length, or where another shift has to follow on as soon as possible after blasting has taken place, the exhaust method should be adopted. With this method the volume that has to be extracted bears no relation whatever to the volume of the development end in question. A given quantity of gas has to be extracted, and that is the only factor that matters. The ventilation piping, or the bratticing that separates intake from delivery, may in practice be kept just within 50 feet from the face, the water-blast clearing that portion between the face and the end of the piping or bratticing.

According to the rate of exhaustion, the development end may be entirely cleared of gas in an hour or less, while the actual volume exhausted may be only a small fraction of the volume of the development end. Where the exhaust air can be led into an upcast shaft, and where only fresh air is used to replace it, ideal conditions can be obtained. During the working shift, however, the exhaust system must be supplemented by an auxiliary system to sweep the dust from the face. Experiment II. gives us both the reason and the most efficient method, namely, to blow-in air round the face, either through a few lengths of thick iron or reinforced concrete piping, or through galvanised iron piping that can be hung up and taken down at the commencement and conclusion of each shift. The exhaust air from the machines forms a cushion of dust-laden air, which can be looked upon as a gas. To borrow a phrase from Mr. E. H. A. Joseph, A.I.M., Brakpan, one needs *velocity* to break up this cushion of gas as well as sufficient *volume* to dilute it to render it comparatively harmless. Compressed air alone gives velocity without volume; the same amount of compressed air issuing from a jet inserted into a few lengths of piping would give both velocity and up to as much as 20 times the volume of induced air.



— Sketch Plan showing [illegible] —

The Blow-in Method.

For short development ends that are scattered about in various portions of the mine the blow-in method has many advantages. During the working shift the one system suffices to sweep the working face. The writer favours 11 in. piping rather than conduits of greater diameter, so that a given volume can be delivered at a considerable velocity.

Velocity means cooling power. Considering also the workmen that one has to deal with, it is of decided advantage to have all piping and fittings of standard size, although in certain cases it would be more efficient to use larger diameter piping and constrict the end near the working face only to give final velocity.

A short length of tubing constructed of boiler plate protects the delivery end from the blast, and it can be kept well within 50 feet from the face. During the shift 30 feet of piping is hung up and temporarily attached to the protected end of the permanent piping, one end of the temporary piping being expanded so as to fit over the [illegible] By selecting 11 in. diameter piping as [illegible] the [illegible] of the standard [illegible] of galvanised [illegible] without waste or unnecessary cutting. The cost, made up from lengths of 11½ ft. flanged and with joint rings complete, is [illegible] per foot. With a volume delivered of 1,000 cubic feet per minute, which is easily obtainable, the velocity is a little over 1,500 feet per minute, which will break up the stratum of dust-laden air in the face from a distance of 25 feet. The writer is [illegible] compressed [illegible] relationship [illegible] of the tunnel [illegible] the gas [illegible] not [illegible] and must reach [illegible] to be carried away. In this connection the effect of jets in the piping is cumulative and [illegible]. Each jet helps to accelerate the expulsion of the offending gas. Where jets of compressed air are used for breaking up the [illegible], the amount so used is a positive gain to the ventilation.

As the outcome of a conversation with Mr. H. J. Ireland, the writer obtained certain data as to the most efficient method of using a jet as a booster, and the booster shown in the accompanying sketch is the result.

The general shape resembles a "Venturi Tube" and the writer has dubbed it a Venturi Booster. The 11 in. diameter is reduced to 5½ in. in a distance of 12 in. This angle should not be steeper than 15°. The 5½ in. diameter is continued as a neck for a further 12 in., and then gradually expanded back to 11 in. in a distance of 4 feet. This expansion angle should not exceed 4°. To ensure a simple and firm connection for the jet a 1 in. socket is screwed into the constricted portion of the tube. A bend of ½ in. piping is screwed in by means of reducers and a brass nozzle attached to the end. No projecting edges are left to cause unnecessary resistance. A sliding door above the [illegible] to examine or change the nozzle after the booster has been inserted into any system. The whole booster is of standard length, so that any one length may be withdrawn from a system and a booster bolted in its place. The first of such Venturi boosters to be installed gave the following results: It was fitted with a ⅛ in. nozzle and the diameter of the neck was 5 in. instead of 5½ in. The air pressure registered 75 lbs. per square inch.

A, B, C, D, E represents a system of 11 in. piping with a branch at B. Ordinary jets as boosters were inserted at D and F. At A was a typhoon blower (16 in.). As work was done alternately in the two ends one booster was shut off while the other was in use. With blower or fan at A working, and old booster at D open while booster at F was shut off, the results were:—

Volume delivered at E ... 560 cubic ft. per min.

Volume delivered at C ... 245 cubic ft. per min.

The old booster also had a ⅛ in. jet, but was probably not properly centred. By placing the Venturi booster in the place of the old booster at D the results were:

Volume delivered at E ... 1,350 cubic ft. per min.

Volume drawn in at C ... 270 cubic ft. per min.

On disconnecting the T piece at B, and testing the fan and the Venturi booster separately, the result was:

Fan plus 525 ft. of piping
delivering at B ... ... 1,260 cubic ft. per min.

The fan had recently been overhauled and consumed [illegible] cubic feet per minute. Venturi booster with 57 ft. of tubing and blowing through a further 310 ft. of piping delivered at F 1,560 cubic feet per minute, or nearly 20 times the volume of compressed air used. There were a few minor leaks in each section.

Some experiments were then carried out in order to test the Venturi Booster as a blower against a jet in plain parallel piping and against an injector blower. The injector blower had five cones and was similar to the Armstrong or H.A.S. blower, except that the larger cone narrowed down to a diameter of 11 in. and was flanged to the 11 in. piping. To ensure comparative results, the length of piping used was practically the same in each case, a 4 in. anemometer was placed into a fixed position for all readings, the position being a little eccentric, while the identical jet was used in each type of blower to eliminate any difference of bore. The Venturi booster used had a neck of 5½ in. in diameter. As the air pressures were fluctuating somewhat an air pressure reading was taken to correspond with each minute reading of the anemometer. Four anemometer readings were taken with each combination, the results plotted as a curve, and all readings given in the table below correspond to an air pressure of 78 lbs. per square inch.

Table of Results.

	Length of 11" Diameter Piping.	Size of Jet	Anemometer Reading.	Velocity foot per minute.
A. Jet in Parallel Piping	62¼"	⅛"	1,655	1,511
B. Injector Blower .	61¾"	⅛"	1,820	1,650
C. Venturi Booster	58¼"	⅛"	1,958	1,772
A. Jet in Parallel Piping	62¼"	3/16"	2,445	2,208
B. Injector Blower	61¾"	3/16"	2,710	2,447
C. Venturi Booster	58¼"	3/16"	3,085	2,783
A. Jet in Parallel Piping	62¼"	¼"	3,176	2,864
B. Injector Blower	61¾"	¼"	3,408	3,072
C. Venturi Booster	58¼"	¼"	3,317	2,991

	Volume delivered cu. ft. per minute.	Improvement B. & C. over A.	Compressed Air in cu. ft. of Free air per minute.	Ratio of Air delivered to Compressed Air.
A. Jet in Parallel Piping	997		20·8	48 : 1
B. Injector Blower .	1,089	9%	20·8	52 : 1
C. Venturi Booster	1,169	17%	20·8	56 : 1
A. Jet in Parallel Piping	1,457		51	29 : 1
B. Injector Blower ..	1,615	11%	51	32 : 1
C. Venturi Booster	1,837	26%	51	36 : 1
A. Jet in Parallel Piping	1,890		83	23 : 1
B. Injector Blower .	2,028	7%	83	25 : 1
C. Venturi Booster ..	1,974	4%	83	24 : 1

The figures for the amount of compressed air used are not absolute. They are taken from Ingersoll-Sergeant tables and no account has been taken of underground temperature and pressure. It would appear that for a neck of 5½ in. in the Venturi booster the greatest efficiency is obtained by using a 3/16 in. jet.

For assistance in carrying out the last set of experiments, the writer is greatly indebted to Mr. E. H. A. Joseph, A.I.M.

The cost of such a Venturi booster is £3 12s. 6d., from which can be deducted the cost of the same length of piping, namely, 23s., leaving a balance of £2 9s. 6d. As to the design of the booster itself, the only definite data are the angles of 15° and 4°. The amount of constriction, length of neck and size of nozzle are points that may possibly be improved upon. The first and third factors are probably inter-dependent. The data obtained from Mr. Ireland, and imparted by the writer to several Dust Inspectors, have given a fillip to the efforts at improving ventilation, more especially on the Far East Rand; and the writer is publishing these data that they may serve as a basis for further improvement.

The Legion Mines in Rhodesia.

Considerable activity has been taking place recently in prospecting in South West Gwanda in what is known as the "Mystery District," and we understand that the Gold Fields Rhodesian Development Co., Ltd., has taken an option over the Legion Group of mines owned by Mr. W. H. Robinson, and will be starting up an extensive development scheme almost immediately.

June Output: Group Returns.

ANGLO-AMERICAN GROUP.

The following are the results of operations for the month of June, 1923:—

	Tons milled	Working Costs per ton milled		Value of Gold Declared	Yield per ton	
		s.	d.	£	s.	d.
Brakpan	65,000	22	0·8	114,970	33	4·5
Springs	52,000	22	8·2	98,578	37	11·0
Totals and averages	117,000	22	4·1	£213,548	36	6·0

	Working Profit based on standard value of Gold			Estimated Premium taking gold at £4/9/6 per fine oz. less Exchange on Remittances	Total Estimated Profit
	Total	per ton			
	£	s.	d.	£	£
Brakpan	43,245	13	3·7	3,759	47,004
Springs	39,599	15	2·8	3,613	43,212
Totals and averages	£82,844	14	1·9	£7,372	£90,216

Note.—Brakpan Mines.—In addition to the above profit 3,335 fine ounces of gold, valued at £14,452, were recovered from the amalgamating plates rendered obsolete through the adoption of the corduroy concentration process.

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of June, 1923:

Mine	Tons Crushed.	Revenue from Gold.	Total Working Costs.
		£	£
Government G.M. Areas	147,000	276,500	129,509
Langlaagte Estate	97,500	126,465	96,224
New Primrose	21,000	19,551	18,112
New Unified	10,500	9,878	9,568
Randfontein Central	189,000	226,372	187,554
Van Ryn Deep	61,000	120,855	60,994
Witwatersrand	44,700	49,913	41,870
Totals and averages	570,700	829.534	543,831
May totals	596,100	864,342	567,097

Mine.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue £
Government G.M. Areas	17·622	147,717
Langlaagte Estate	19·738	30,871
New Primrose	17·250	1,575
New Unified	18·225	364
Randfontein Central	19·847	40,068
Van Ryn Deep	19·998	61,084
Witwatersrand	18·734	9,056
Totals and averages.	19·058	290,735
May totals	19·026	302.111

New State Areas, Ltd.—During May and June a total of 32,000 tons was crushed, and 1,768 fine ounces of gold were recovered. Only low-grade rock was crushed during the tuning up of the plant, and most of the gold is hung up in the tube mills. The plant is now getting into order and the position is steadily improving.

Note.—The above results are arrived at by calculating the gold at £4 9s. per fine ounce.

New Unified Main Reef G.M. Co., Ltd.—This mine ceased operations as at 30th June

KNIGHT CENTRAL.

The following cable was sent to London on July 9: "As the continuation of mining operations cannot be hoped to yield a profit, breaking of rock was discontinued on Friday last, the 6th instant, and it is expected that milling operations will finally cease on Wednesday next, the 11th instant."

GLYNN'S LYDENBURG.

The following cable was despatched to London on July 9: "Reef struck in South Shaft on 30th June at depth of 394 feet. Value 17·4 dwt. over 10·1 inches. Water in shaft prevented accurate sampling at earlier date."

GENERAL MINING AND FINANCE CORPORATION.

The June operations of the producing mines of the group were as follows:—

Company	Tons Crushed	Total Cost.	Cost per ton.	Total Revenue	Profit.
Aurora West	12,660	£12,526	19·79	£14,537	£2,011
Meyer & Charlton	14,500	15,585	21·50	36,705	21,120
New Goch	17,300	16,313	18·86	17,690	1,377
Van Ryn Estate	32,610	30,600	18·77	38,690	8,090
West Rand Con.	35,200	38,024	21·60	42,103	4,079
	112,270	£113,048	20·14	£149,725	£36,677

In calculating the revenue, gold has been taken at a value of 89s. per fine ounce, less estimated realisation charges.

TRANSVAAL SILVERS.

The output of this company for June totalled 343·84 long tons of lead bullion, containing 33,172 ozs. of fine silver, representing a total value, based on the latest quotations for the metals, of approximately £12,419.

KLERKSDORP GOLD CUTPUT.

Two producing mines in the Klerksdorp district reported for the month of May, working with 20 stamps and one tube mill. The gold recovered by the [illegible] amounted to 832½ ounces, value £3,537, from 3,840 tons of ore treated; the Rietkuil Mines produced 96¾ ounces, value £411; and a tailings site was responsible for 28¾ ounces, value £122; making a total of 958 ounces, value £4,070.

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TOPICS OF THE WEEK.

Native Labour Shortage.

Without in any way wishing to detract from the growing prospects of the cotton industry in South Africa as lately described in our columns, it should be emphasised that a shortage of native labour to pick the cotton constitutes a real fly in the ointment. As the figures for June showed, the mining industry is every day feeling the shortage of labour more acutely, and it is known that the report of Colonel S. M. Pritchard, Secretary of Native Labour, and J. A. Ashburnham, Chief Magistrate of Johannesburg, will plump for increased facilities for supplies from Mozambique. Figures published during the week show that there were 49,000 fewer natives employed in mines in South Africa at the end of May, 1923, than in May, 1920. The figures are: 307,731 in May, 1920; 258,707 in May, 1923—thus giving the shortage mentioned. This is significant, in view of the fact that, had the diamond industry been working to-day at the same pressure as in 1920, the shortage would have been more serious.

The Swaziland Commission.

The Swaziland Mineral Development Commission—to give it the proper official designation—held its first sitting at Mabane last Monday. Evidence was taken from several witnesses, including at least one prospector. The next sitting of the Commission will be held towards the end of this month at Johannesburg, and the date and place of sitting will be duly communicated to intending witnesses. The members of the Commission are: Messrs. R. Feetham, M.L.A. (Chairman), Major C. P. Swinburne and Mr. William Pott. The terms of reference are as follows: (a) To enquire into and report upon the present position with regard to the development of mineral concessions in Swaziland, and to recommend what steps should be taken by the Swaziland Administration in consultation with the holders of such concessions for authorising and encouraging prospecting and mining operations thereon in such manner as may be best suited to the general interests of the territory; (b) to advise as to the terms of any legislation that may be required for that purpose."

London and S.A. Mining Dividends.

The features of London comment on the dividends of South African companies are disappointment at non-declaration by the Anglo-American and Consolidated Diamond Companies, and satisfaction with those of the "J.C.I." group. In regard to the latter one of the financial papers says: "For 1922-23 the Johnnies Company has received a full year's dividends from its gold subsidiaries, while its diamond interests must also have yielded a fairly substantial sum. We cannot say, however, whether the 25s. just declared on De Beers Preference will be taken into the Johnnies current accounts or the 1923-24 ones. Anyhow, after distributing to its shareholders nearly £200,000 more than a year ago, the Johnnies Company will still be able to carry forward the increased amount of about £172,000, against just over £162,000 brought in. Four of the subsidiaries announce interim dividends for the current year, which naturally compare very favourably with those for the strike half of 1922. The Government Areas and the Witwatersrand (Knights) Companies declare exactly the same amounts as for the second half of last year, the Van Ryn Deep a little less, and the Langlaagte Estates rather more. The faint hope of a resumption of dividends by the Randfontein Estates Company has not yet been fulfilled, but both that concern and the associated Randfontein Central Company are more than likely to contribute to the Johnnies' coffers during 1923-24. It may not be till 1924-25 that the New State Areas subsidiary starts dividends. But in the meantime the diamond holdings should yield more handsome returns. Altogether, therefore, it looks as though the Johnnies Company should do just as well in the coming financial year as in the one about to end. It may easily do even better." Of course, when this was written the London papers had not realised the new burden on the parent company in the shape of the Provincial Council's Companies' Tax, which is now payable.

The Menace to Gold Mining.

It is not our fault if readers are not now familiar with the danger to the very existence of the gold mining industry both in this country and Australia, caused by the menace of high working costs. But it will be news to most people that the industry in the United States is now in grave jeopardy and that a recent debate has resulted in the appointment of a Senate Commission of enquiry, which is to report to Congress by January 1st, 1924. The Commission is instructed to report upon the following subjects: 1. The causes of the continuing decrease in the production of gold and silver. 2. The causes of the depressed condition of the gold and silver industry in the United States. 3. The production, reduction, refining, transportation, marketing, sale, and uses of gold and silver in the United States and elsewhere. 4. The effect of the decreased production of gold and silver upon commerce, industry, exchange, and prices. The present situation with respect to the gold and silver mining industries is well illustrated by the following data: The total world production of gold (in dollars) for 1915 was $468,724,918, and for 1921, $329,915,101, as shown by the reports of the U. S. Mint; and for the year 1922, $306,793,000, which is based on a preliminary estimate; this indicates a decrease of 34·5 per cent. between 1915 and 1922. When we consider the production of gold and silver in the United States, as compared with the entire production of the world for the periods above mentioned, we find that the production of gold (in dollars) was $101,035,700 in 1915; $50,067,300 in

1921, and 56,160,000 in 1922—a decrease of 51.4 per cent. from 1915 to 1922. The figures for 1915 and 1921 are from the reports of the United States Mint. The silver production of the United States in 1915 and 1922 respectively, as shown by the United States Mint reports, was 74,961,075 and 56,032,186 fine ounces—a decrease of 25.25 per cent. Comparing the declines in the production of gold and silver which have taken place in the United States with those which have been recorded in the world's production since 1915, it is apparent that the gold and silver mining industry in that country has suffered much more extensively and is now in a most serious condition. Since January, 1921, the U.S. Bureau of Labour Statistics index number has risen 20 points, from 148 in that month to 167 in March, 1923. Wage increases have been general and with this indicated increase in the cost of supplies, the production costs of gold and silver have been continually rising with no end in sight. Increasing costs have already greatly depressed the industry and as they mount more mines now operating will be forced to shut down. The Chairman of the Senate Commission said: "Since the Armistice it has become very apparent that the entire prosperity of our country is more gravely dependent upon our export trade than has previously been supposed. European currencies have become greatly depreciated in value as their paper currencies have expanded and their gold and silver reserves have diminished, thus decreasing their power to buy the products of the United States. It is obvious that this purchasing power in our market can be increased largely through the betterment of foreign currencies which will be made if they decrease the volume of their paper currencies and increase their gold and silver reserves, thus restoring their pre-war parity." The Commission, we learn, is now investigating what has taken place in this regard, with a view to rendering every assistance in pointing out the advantages which will accrue by restoring normality to currencies. From the point of view of the South African gold and silver producer we, of course, heartily wish that the powerful influence and efforts of the United States Senate Commission may be crowned with success.

Problems of Deep Mining.

Since the close of the valuable and interesting discussion on deep mining problems that followed the reading of Mr. E. C. [illegible]'s paper on the City Deep, little has been heard of the question of working under the atmospheric conditions of deep mines. The problem, however, becomes every day of increasing practical interest and importance on the Central Rand, and data bearing on it are valuable, from whatever source they may come. A lengthy report was recently presented by a committee of the Institution of Mining Engineers to the annual meeting of that body, which outlined the history of research on the subject to date, and described the different researches now being carried on. No doubt those of our readers who are brought into intimate contact with deep mining on the Rand will possess themselves of the complete report, of which it is possible to mention but a few points here.

The results of the work carried out for the Committee have been published from time to time in the form of papers printed in the "Transactions" of the Institution of Mining Engineers. Five of these reports have so far appeared. The first report dealt with the general physiological principles underlying the control of body temperature and the conditions met with underground which tend to prevent such control. In this report the preliminary work carried out for the committee was referred to. This included the devising of special apparatus for making accurate hygrometric and strata temperature determinations and a number of hygrometric observations taken in pits in the Doncaster area. The conclusions reached in this report were as follows:—(1) The hindering effects on men of the heat in deep mines depend, not on the temperature of the air, but on the wet-bulb temperature and the degree of stagnation of the air. (2) In the downcast shaft and main intake of a well-ventilated coal mine, the natural temperature of the strata has no appreciable influence either on the temperature of the air or on the wet bulb temperature. (3) The data so far available indicate that, by properly-designed ventilation and avoidance of leakage, the hindering effect on men of the heat in deep mines can be obviated up to any depths at present contemplated in the working of coal or other minerals in Great Britain. The second report dealt with the installation of a refrigerator plant to cool the air being taken down the intake shafts of the Morro Velho gold mine, Brazil, in which mine work is being carried on at depths of over 6,000 ft. below the surface. At this depth, despite the very low geothermic gradient (1 deg. Fah. in 140 ft.), temperatures as high as 113 deg. and 92.5 deg. (wet bulb) are met with, whilst strenuous work is being done regularly in a good air current at a temperature of 100 deg. (dry bulb) and 81.85 deg. Fah. (wet bulb). A recent paper gave in detail the results obtained by the introduction of this cooling plant. The third report covered work done by Mr. J. P. Rees, A.R.S.M., and detailed observations of temperatures and moisture in deep coal mines. Results of readings taken with the Kata thermometer in various pits were also given and comments made thereon. There are three causes for the rise of temperature in underground workings: (*a*) Heat due to compression of the air as it descends shafts or inclines (approximately 5½ deg. per 1,000 ft. vertical descent); (*b*) conduction of heat from the surrounding strata; (*c*) heat from the oxidation of coal, other minerals, or timber. Evaporation from the walls of shafts or roadways, or from freshly-exposed coal or other material, may have a cooling effect. Mr. Rees's charts showed that the rise in temperature of air resulting from the conduction of heat from strata is reduced to a minimum in shafts and roads where the volume of air passing is sufficiently large. The practical importance of a large flow of air in controlling underground temperatures stands out prominently as a result of these tests. The fourth report details the attempts made to obtain reliable data of strata temperatures, and of a great number of determinations some fifty of these, it is believed, are absolutely trustworthy. The fifth report deals with temperature conditions resulting from spontaneous heatings and fires in pyrites mines of the Huelva district in Southern Spain, and illustrates very clearly the influence of oxidation of minerals in greatly raising the temperature of air in the mine workings. Under the head of researches at present being carried out, the most notable feature of the report is the testing of the application of refrigeration underground. In connection with the Tyndall Fund of the Royal Society, and in conjunction with the committee, Prof. K. Neville Moss (Professor of Coal and Metal Mining in Birmingham University) has done a large amount of work on the control of body temperature by sweating and other means in the experimental chamber. The results of these experiments are of great interest, and will shortly be published. They have revealed the great importance of acclimatisation to high temperatures, the causes of and means of avoiding the fatigue due to high temperature, and the causes and means of preventing the attacks of cramp from which workers in hot atmospheres are prone to suffer. The interest of this investigation is, of course, not confined to mining, but extends to all conditions under which men have to live or work in warm air, or under conditions which necessitate much sweating.

British South African Explosives.

The net profit of the British South African Explosives Company, of which Nobel Industries holds practically all the capital, is £14,700 higher for 1922 than for the previous year at £48,700, but the dividend is to be reduced from 10 to 8 per cent., leaving £72,600 to go forward, as compared with £63,500. Deductions from the dividend in respect of British and South African taxes will total 5s. in the pound, as against 5s. 7d. Business expanded during the year, but the strike on the Rand, together with contracts at fixed prices with two of the mining groups, adversely affected earnings, which in 1921 were subject to heavy provision for taxation. Lower prices for raw materials are expected to lead to better results for the current period.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

* * *

Netherlands Bank.

The Netherlands Bank of South Africa has received cable advice from its head office in Amsterdam to the effect that the general meeting of shareholders has approved of the directors' proposal for the disposal of last year's profits as under, after having made full provision for bad and doubtful debts: 4 per cent. dividend (as last year), £9,600; to reserve funds, £13,300; to reserve for taxes, £2,500; carried forward, £1,350; total, £26,750.

* * *

Gaika Prospects.

The Gaika is reported to be doing better. The energy displayed by the manager, Mr. Mackilligin, is referred to in the report of Mr. R. Rawdon Johnson, who has concluded his visit of inspection. In his report he says that a continuance of the present active policy will produce a profitable life of several years in the upper levels. Mr. Johnson has submitted to the directors a programme for the development of the lower levels, but no decision will be come to until the receipt of Mr. Mackilligin's report on the full results for the year ending June 30.

* * *

Bwana M'Kubwa Copper.

Speaking at the recent meeting of the Rhodesia and General Exploration Company, Ltd., Mr. Edmund Davis said that, so far as the Bwana M'Kubwa mine was concerned, it was developing in a far better manner than ever anticipated, and the bottom of the mine, at the 350 ft. level, so far as it had been driven, was remarkably rich. The mine was situated in Northern Rhodesia on the railway line within 14 miles from the Congo border. The pilot plant should be producing in July. The company had been in existence for a long time, but he had only joined the Board when sufficient capital had been provided to develop the property on a proper scale, which was a policy he always propounded in any company he was connected with previously to embarking a large amount of money in equipping what might otherwise have proved to be an unprofitable concern. The Bwana M'Kubwa at present was developed on a very large scale; about 9,000,000 tons of at least 4 per cent. ore had been proved, and should the bottom level continue to develop as at present, the value of the ore reserves would be greatly improved. If the ore reserves were only 4 per cent. and the process satisfactory, copper should be landed in England at a lower price than had yet been known. He would be dealing very fully with that point at the next meeting of the Bwana M'Kubwa Company, and, as this company might be obtaining a participation in the underwriting of the contemplated issue, he advised the shareholders to study the report of the Bwana M'Kubwa meeting when it took place

Namaqua Copper Company.

The prospects of the Namaqua Copper Company have greatly improved. Of late years the company has passed through some tribulation, and since 1918 there has been an almost entire suspension of copper production. Now, however, the mine is thoroughly equipped in every respect, and transport, hitherto very deficient, has been greatly improved. The ore reserves have been increased from 40,000 tons of 6 per cent. copper to over 105,000 tons of 6½ per cent., and there are large quantities of low grade ore, which at a later period may be profitably treated. This year, for the four months ending April 30, 10,544 tons were smelted, the resulting matte afterwards being converted into blister containing 713 tons of fine copper.

* * *

British Hume Pipe and Concrete Construction.

The report for the two years ended March 31 last of the British Hume Pipe Co.—not to be confused with the Hume Pipe Co. of S.A., Ltd.—states that the debit balance amounts to £17,376, after provision for depreciation of patents. The Hume pipe plant installed by the Stanton Ironworks Co., Ltd., is now virtually completed, and a portion of it fully employed, but the output has not yet reached the level anticipated. Owing to the generally unsettled conditions, the board experienced considerable difficulty in disposing of the company's rights for foreign countries, but agreements have been concluded as regards France, Germany, Spain, and Portugal, Straits Settlements, Mexico, Dutch East Indies, Indo-China, and certain minor territories, and negotiations are in progress for the disposal of working rights in the United States of America, and Canada.

* * *

Natal Navigation and Coal Shortage.

Interviewed in regard to the complaint that Capetown merchants were having their supplies of Natal coal cut off, Mr. J. Townley Williams, Chairman and Managing Director of the Natal Navigation group of collieries, said that as far as his group was concerned they were executing all orders for local consumption or elsewhere. "Probably," he said, "the difficulty exists at Capetown through the general shortage of railway trucks, which just now is affecting not only the Capetown local trade, but also the general shipment trade, including export coal. A ship at Capetown is delayed and inconvenienced in just the same way as the local consumer. Just now there are several factors combining to make the position difficult, such as the absorption of all kinds of trucks for agricultural show traffic. Maize export traffic has also absorbed a large number of trucks that would be suitable particularly for overland trade, including Capetown. Then, it is only a particular kind of truck that can be sent from Natal to Capetown, and this is the kind of truck which is absorbed by any evaporation in general merchandise, such as mealies. Then, again, truck supply has been interfered with by excursion trains for the Durban winter season, which prevent trucks getting quickly to the mines. It is absurd to say that high-grade coals are being shipped to the detriment of coal for local consumption. It is in the interest of the collieries to sell as much local coal as possible, as they get a higher price for this coal than they do in the export market." Mr. Williams explained that the collieries had also been handicapped through the shortage of native labour, pointing out that this class of labour was always diverted to the more congenial forms of employment, such as railway works, sugar estates and general industry. Mr. Williams concluded by saying that owing to the unsatisfactory conditions prevailing the total coal output for the month of June (a month of increased demand) was only 330,000 tons for 26 working days in the month, as compared with 360,000 tons for the month of May (27 working days). He considers that the July output will be still further reduced, not for want of business, but through inability to supply coal. He thinks the output will be still lower than that of the month of June unless the truck supply improves.

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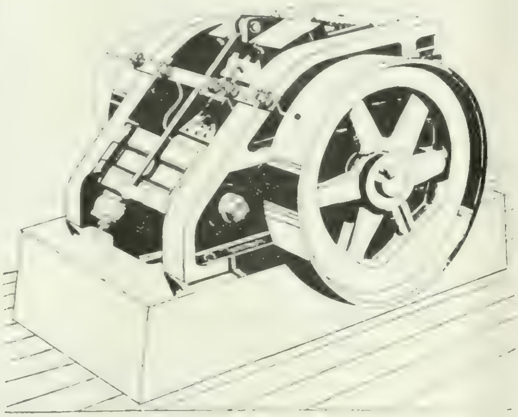

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INDUSTRIES SECTION.

The Soap Making Industry of South Africa.

MORE PRODUCTION THAN DEMAND—BIGGER CONSUMPTION OR MORE POPULATION WANTED—FACTORIES AND PLANT WORTH £1.200.000—HALF-A-MILLION ADDED IN MANUFACTURE TO VALUE OF S.A. MATERIAL.

In a special article dealing with the tobacco industry which appeared in the "S.A. Mining and Engineering Journal" last week, it was shown that this country grows and manufactures over 90 per cent. of tobacco consumed and that less than 2 per cent. of its cigarettes are imported. The soap industry furnishes another striking example of a local industry that has "made good." In fact, the percentage of South African product used is even greater in the case of soap, and this industry is in the position of having plant and resources both in raw material and organisation equal to a production of at least double the country's present consumption.

Soap, however, is not a commodity which can be exported with advantage, to any serious extent because practically every developed country is already well equipped in the matter of soap manufacture. The only scope for further development of this industry in South Africa therefore is for the white population to increase or the native population to be educated up to its use—in the sense of personal application of course; so far as the average house boy is concerned, he needs no encouragement to swell the soapmakers' profits!

Thirty Million Pounds per Annum.

There is at present soap manufactured in this country to a total of over 30,000,000 lbs. per annum, while the importation which stood at nearly 3½ million pounds in 1920 (of which America sent rather less than 1¼ million lbs.), dropped to 600,000 lbs. in 1921 and rose again to 1,148,557 lbs. last year. It will be seen, therefore, that taking the average of the last three years, the local manufacture of soap in relation to the imported article stood in the proportion of 20 to 1. On the 30,000,000 lbs. made in this country, a little over one million pounds is toilet soaps and the remainedr laundry and household soap.

There are about twenty soap factories in South Africa representing in value of land and buildings £535,000 and in machinery £661,000. The materials used (largely South African production) reach an annual value of nearly £2,000,000; the added value in process of manufacture is approximately another half million bringing the output to an annual value of about £2,316,000. Last year's imported soap was valued at less than £20,000.

Not a Monopoly.

Prior to Union there were a few small and scattered soap factories in the country, but there was no really well organised attempt to manufacture soaps on a scale adequate to the country's needs, and on modern methods, until Lever Brothers started their factory in South Africa ten years ago. Since that time imports have fallen until to-day the industry is in the position of requiring fresh fields to conquer. It must not be supposed, however, that the industry is entirely in the hands of the Lever combine; there is nothing in the nature of a monopoly. Soap is a commodity that the "small man" can produce, oils and fats of local manufacture can be utilised and it is computed that home made soap is produced in this country in larger quantities per head of population than in any other country, the explanation being that the industry has been handed down by the old Voortrekkers to their descendants, and many sheep farmers still utilise their surplus animal fats, with the addition of tallow, in this way. But in the aggregate this output is of very small proportions compared with the commercialised industry.

It is somewhat difficult to estimate the soap consumption in a country of such mixed population, but taking the white population at one and a half millions, and the purchasing power of three natives as being equal to one white person, the consumption is put at about 11 lbs. per head of population (all races) per annum, which of course is very much smaller than the consumption in countries more populated and of older civilisation. There are, however, plants in this country that can turn out toilet soap equal in quality to anything in the world, and it is a somewhat remarkable thing that since toilet soap has been manufactured in South Africa, the sale of this variety has more than doubled. Shaving soaps are still imported, not because of any difficulty in their manufacture, but simply because the metal containers in which purchasers prefer to have them supplied are not yet made locally. It may be recalled that in connection with the tobacco industry it was shown that a valuable subsidiary industry had been built up—packing materials being produced locally to the value of about £350,000 per annum. Here is an opening for an extension of this enterprise.

The sale of better class laundry soaps appears to have been on the increase in recent years, but unfortunately a great many people cling to the old tradition of buying cheap bar soaps, forgetting that there is no economy in using soap of this description, as best value is to be found in pure soaps. There is a very old prejudice in South Africa in favour of the so-called blue mottled or "blauwzeep" soap, simply because for many years past this class of soap was almost the only kind imported, and the Dutch population being extremely conservative they continue to demand this, not realising that it would be more economical to buy a bar of pure soap and the equivalent blue that such a bar of "mottled" would contain.

A Chance for the Farmers.

With regard to the raw materials used in soap manufacture there are certain oil mills where the oilseeds, obtained largely from the East Coast of Africa, are crushed, but these seeds could be grown in the Union, such, for example, as the cotton seed, soya bean and the common ground or pea-nut. All of these might be produced in the Union in very much larger quantities than at present, and at a lower price than it is possible to obtain supplies from the coast, and these would furnish useful materials for the South African soap maker. It should also be possible for olives to be grown in certain parts of the country; it is possible that the oil therefrom would be found more valuable for edible purposes than for soap making, though in the process of refining it would yield a residue suitable for the soap maker. There is already in South Africa ample plant for the crushing and refining of very large quantities of oil seeds both for soap making and for the manufacture of edible oils and fats. This is a possible development of great importance to the agricultural community, because apart from the value of the market at their doors for the oil seeds, the residue in the form of oil cake is absolutely essential for the successful development of the stock industry and for milk production.

Valuable By-Products.

Another valuable by-product of the soap making industry is glycerine, of which something like three-quarters of a million lbs. is now produced. This is essential in mining, and even more so in time of war; it is also used in many other substances and is a base ingredient in practically all [illegible] preparations. All oils and fats contain fatty acids and glycerine as glycerides. In saponification the fatty acids are neutralised by an alkali and the resultant soap [illegible] [illegible]. In this process of saponification the glycerine is released and precipitated along with salt, [illegible] and impurities. This is what is known as soap lye, and after being subjected to the usual distillation crude glycerine is obtained. It is possible, of course, also to treat the oil or the fat in what is called splitting, so that one has the two separate products.

Why Not Margarine?

Allied with the soap industry and the use of oils and fats in other countries is always the manufacture of edible oils and fats and margarine. Unfortunately the provisions of the South African Dairies Act of 1918 preclude the manufacture of margarine in this country because no butter fat is allowed. But there is no doubt that there is scope for a great development in the production of cooking fats and oils for edible purposes in South Africa.

The manufacture of soap in this country is unquestionably one of the most efficient of our local industries. It has in fact completely overcome the prejudice against the use of South African products. Its further development will furnish additional means of employment in both commercial and technical departments and young South Africans are being trained in the business. It offers considerable scope for the employment of girls and young women.

In the comparatively few years that the industry has been established in this country, at any rate on modern and scientific lines, its direction has necessarily been under highly qualified men who have been brought out from England, but in due course these will doubtless be succeeded by the apprentices at present being trained. The future development of the business will be largely along the lines of finding new uses for the raw materials and the by-products of the industry, opening up new sources of supply and creating local openings for the South Africa branch of the great organisation with which soap making in this country is now mainly identified. That is the definite policy of those responsible for the administration of this organisation.

In our article on "Prospects of the Tobacco Industry" last week it was stated that South African producers had a preference of 9d. per lb. in the Empire; this was a misprint, the preference is 1s. 4d. per lb.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

July 19.—Transvaal Consolidated Lands (s), 12 noon.

August 10.—Transvaal Consolidated Lands (s), 12 noon.

Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

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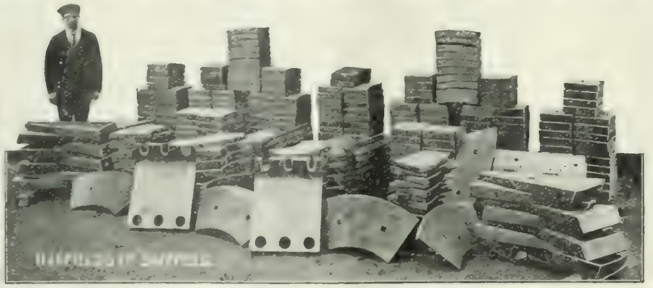

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The Week in the Sharemarket.

SLIGHT IMPROVEMENT—DEBENTURES BOUGHT —POSITION HEALTHY—NEW RHODESIAN FLOTATION.

The scarcity of stock responded to a slight demand which became evident towards the end of the week, and prices at once advanced fractionally. There were evidences of improvement in almost every quarter. Corner House shares featured Modders, and Modder B's, Nourse, Durban Deeps, City Deeps and Crown Mines were all a little better. Crown Mines are particularly hard to get at present limits. Barnato stocks have been very firm, and there is an improvement to record in Randfonteins. States and Langlaagte Estates have been firm; New States rather sagged on some slight bear selling. General Mining stocks had no special feature. There has been some revival of business lately in Transvaal Silvers. The Consolidated Goldfields stocks require no comment; there has been the usual turnover in Simmers. Robinson Deep "A" and "B" shares have been enquired for, and the Robinson Deep debentures are the turn harder in price. Gedulds and Modder Deeps of the Union Corporation stocks have both improved. Much better things are expected from Gedulds, which appear to be increasingly hard to get. Of the Anglo-American stocks, Brakpans withstood some selling of the newly issued rights, and the stock has since improved. Springs, after early weakness, are a better market now. West Springs remain steady; the development is said to be well maintained.

Diamond shares recovered a little of the recent decline, Consolidated Diamonds rising again to over par. Crown Diamonds, although talked up, have not yet developed strength. West Ends were rather offered.

Of Industrials, S.A. Alkali shares rose three shillings from the recent low point, and very few shares changed hands. Cements weakened a fraction evidently on renewed fears of competition from oversea.

Investment stocks had some quiet business. National Banks remain around £6. Reserve Banks have been steady throughout the week. There was some business in Rand Water Boards, and Loans recorded a small turnover. Robinson Deep debentures have been in favour as an investment, and the coming of the Durban Deep debentures is being awaited with interest.

Regarding Rhodesians, there is little fresh local news. The shares of the new Sherwood Star have been dealt in here at 25s., and the flotation is arousing some interest. Shamvas report encouraging development. Cams have been steady.

All round the market position is a healthy one. Money is plentiful and little time business is open. The exchange rate went another half per cent. in favour of the market during the week, and a further improvement may be anticipated. In London the South African market is in the same sound position as it is here. The native labour outlook is expected to improve.

	Fri. 6th.	Sat. 7th.	Mon 9th.	Tues 10th.	Wed 11th.	Thurs. 12th.
Anglo Amer. Corp.	21 3*	21 6	21 6*	21 9	21 9*	22 [illegible]
Apex Mines	5 6*					
Aurora Wests		5 6*	5 9*			[illegible]
Brakpan Mines	56 6†	55 0*	55 6	55 0*		55 [illegible]
Brick and Potteries			4 0*		4 6*	
British South Africa				12 9*		
Bushveld Tins	0 3*	0 3*	0 3*	0 3*	0 3	[illegible]
City and Suburban	2 9	2 9*			3 0†	
City Deeps	49 0	49 0	48 6*	48 9*	49 0*	[illegible]
Clydesdale Collieries		17 0†	17 0†		17 6†	16 [illegible]
Con. Diamonds	18 10†	20 0	19 9	19 9	19 10	20 [illegible]
Con. Main Reefs	8 6	8 9	8 7*	8 9	8 6*	8 [illegible]
Coronation Collieries						[illegible]
Cor. Freeholds		0 5*		0 5*	0 5	
Cor. Syndicates	5 2†	4 10*	4 10*	4 11	5 0	[illegible]
Crown Diamonds	5 11	6 0*	6 1*	6 0*	6 1	[illegible]
Crown Mines	46 9	46 9*	46 9	46 9	47 0*	47 [illegible]
Daggafontein Mines	2 6*	2 6*	2 7*	2 7*	2 7*	2 8
Durban Rood. Deeps	15 0*	15 0*	15 3		15 0	15 [illegible]

	Fri. 6th.	Sat. 7th.	Mon. 9th.	Tues. 10th.	Wed. 11th.	Thurs. 12th.
East Rand Cons.	1 6*	1 6*	1 6	1 6*	1 6*	1 6
East Rand Deeps			0 7		0 7	0 7*
East Rand Props.					4 10	4 6*
Eastern Gold		0 [illegible]		0 [illegible]	0 6*	0 4
Frank Smith Dmds.	2 9†	2 6*		2 6†	2 6*	2 10
Geduld Props.	[illegible]	[illegible]	[illegible]	[illegible]	18 9*	20 0*
Geldenhuis Deeps						4 6*
Glynn's Lydenburg	14 [illegible]	14 6	14 [illegible]	14 0	14 9*	14 9†
Government Areas	109 [illegible]	[illegible]	110 [illegible]	110 6	111 0	110 [illegible]
Hume Pipes	[illegible]	[illegible]		[illegible]		8 6*
Lace Props.	[illegible]	[illegible]	[illegible]	[illegible]	7 6*	7 6
Langlaagte Estate	19 [illegible]	20 0	20 3	20 0*	20 3*	21 0
Leeuwpoort Tin		4 [illegible]	[illegible]	[illegible]	4 6*	4 [illegible]
Lydenburg Farms	2 [illegible]	2 6*	2 6			2 6
Meyer and Charlton			[illegible]	[illegible]		
Middelvlei Estates	[illegible] 0*	[illegible]	1 [illegible]			
Modder B's	[illegible]	[illegible]	[illegible]	22 9*	23 6*	23 3
Modder Deeps	30 [illegible]	[illegible]	30 [illegible]	30 0	30 9	30 9*
Modder East	[illegible]	[illegible] 7	[illegible] 10½	[illegible] 10	[illegible]	[illegible]
Natal Nav. Coal		27 0*	27 6*	27 6*	27 6*	27 6*
National Banks	£6*	£6*	£6*	£6*	£6¼	£6
New Eland Dmds.	[illegible]	10 0†	10 0†	[illegible]	39 6*	39 6
New Era Cons.	6 6*		6 7*	6 7*	6 7	6 6
New Geduld Deeps			6 [illegible]	6 6*	6 6*	
New Kleinfontein	[illegible] 0*	[illegible] 1*	[illegible]	[illegible]	5 6*	[illegible]
New Modders	75 6*	76 3	76 6	76 6	76 0	76 9
New Primrose		3 [illegible]	3 [illegible]	3 6*		
New State Areas	30 6*	31 0	31 [illegible]	30 [illegible]	30 6*	30 [illegible]
Nigels	8 [illegible]		8 [illegible]			
Nourse Mines	13 9	14 0	13 11	13 10	13 9*	14 0
Pretoria Cement	35 3*	35 9	[illegible]	[illegible]	[illegible] 9*	37 0
Rand Collieries	1 0*	1 0*		[illegible]	1 0*	1 0
Rand Nucleus	1 0*	1 1	1 0	1 0*	1 0*	1 0
Randfontein Cent.						14 0†
Randfontein Est.	18 6	18 10½	[illegible]	18 10½	19 [illegible]	19 3
Rouxville Dmds.				1 [illegible]		1 2*
Robert's Victors	[illegible]	[illegible]	[illegible]	[illegible]	7 [illegible]	7 0
Robinson Deep A	[illegible]	31 0*	31 0*		31 0*	31 0
Robinson Deep B	[illegible]	12 3*	12 6*	12 6	12 6*	12 6*
Rooibergs	[illegible]	3 [illegible]	[illegible]	3 3†	3 3†	3 0
Ryan Nigels	4 0†			4 0†	4 0†	
Shebas	2 6†	2 [illegible]				
Simmer and Jacks	2 9*	2 9*	2 10*	2 9	2 9*	2 10
S.A. Breweries	30 0*	30 0*	30 0	30 0*		
S.A. Lands	3 0*	3 0*	3 0	3 0*	3 0*	3 0
S.A. Reserve Bank	£131 *	£131*	£131*	£131	£131*	£131
Springs Mines	13 3	13 3*	13 3*	13 6	13 0	13 6
Sub Nigels	9 11†	9 [illegible]	10 3†	9 3*	9 3	9 3*
S.A. Alkali	8 6*	8 6*	8 [illegible]	8 9*	9 [illegible]	11 0
S.A. Townships	10 0	10 [illegible]	10 3*	10 6†		9 6*
Trans. G.M. Estates	9 0†	8 3*		8 9†	8 9†	8 0
Transvaal Silvers		13 9*			13 6*	13 3*
Tudors		0 [illegible]				
Union 5 per cent.	£101	£101 *	£101 *	£101¼	£102	£102*
Van Dyk	1 0*	1 [illegible]		1 6†	0 9*	0 9*
Van Ryn Deeps	61 3	61 3	61 9*	61 6*	61 9*	62 6*
Van Ryn Estates	13 0†		13 0*	12 6*	12 0	
Village Deeps	10 3*	12 0*	11 6†	11 6†		10 9*
West Springs	18 9*	19 0	18 7*	18 6*	19 1	19 0*
West Rand Cons.	5 0†			[illegible] 0†	5 0†	5 0
West Rand Estates	2 6†	2 6†	2 6*		2 6†	2 0
Witbank Collieries	31 0*	31 0			31 0	31 0
Witwatersrands						12 6*
Wit. Deeps	13 0*	13 6	13 6*	13 9	13 9*	14 0
Zaaiplaats Tins	3 6*	3 7*	3 9*	4 0	4 1*	4 1*

* Buyers. † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

The Week in British Engineering.

(From Our Engineering Correspondent in London.)

The Trade Position.

The position in engineering generally is, on the whole, not quite so good this week, as buyers are still holding off as much as possible in the expectation that prices will come down. There is no question that, as pointed out by the "Iron Trade Review" of Cleveland, U.S.A., the result of the Ruhr complications has been to increase prices in the main products of engineering throughout the world, and unfortunately the only result seems to be adverse to the progress of engineering. As is mentioned, the total world production of pig iron in January, 1923, was [illegible] tons gross, and in March this seems to have decreased to approximately 4,900,000, that is a reduction of 11 per cent. in three months, whilst about 100 blast furnaces have been blown out in Germany and only about 60 re-lighted in other countries in the world. Thus the continent pig iron production of France, Germany, Belgium and Luxembourg was 1,345,000 tons in January and 550,000 tons in March. This naturally has had the effect of increasing the demand for British iron, steel and coal, but at the same time the situation is somewhat artificial and has had the serious result of increasing prices, so that, for example, it is not now possible to sell British pig iron in America. The production of pig iron in Great Britain for the month of April was 652,200 tons, as compared with 633,000 tons in March, whilst the number of blast furnaces in operation at the present time is now 216 as compared with 202 at the end of March. This, of course, would be extremely satisfactory if it was not, as already stated, partly due to artificial conditions. It is interesting to note that the average British monthly production of pig iron before the war was 855,200 tons, together with 638,600 tons of steel, whilst for the month of April, as already mentioned, the pig iron figure has risen to 652,200 tons and is beginning to approach the pre-war figure, whilst the steel production is 749,400 tons, considerably above the pre-war output, as pointed out in previous notes. The average increase in price during the month of April was 5.2 per cent. as compared with March. It may be stated also that the American production of steel ingots in April was at the rate of 47,220,000 tons per annum, which is some [illegible],000,000 tons in excess of the previous highest Ameriran figures. With regard to the expected reduction in prices, it is stated that the pig iron manufacturers refuse to make any further cuts, and there is a decidedly more hopeful feeling on the London Iron and Steel Exchange that business will undoubtedly increase as soon as the prices are stabilised. Unfortunately there is little improvement in the coke position, and pig iron is very scarce.

General engineering remains much as before, there being a very slow but steady improvement, so that unemployment is decidedly still decreasing.

At the annual meeting of the well known firm of Messrs. Clayton & Shuttleworth, Ltd., of Lincoln, the situation was stated to be distinctly better, and the worst of the storm seems to have been weathered. Great hopes are expressed with regard to the new "Clayton" water tube boiler, which the company are now actively proceeding with, and a number of important orders have been secured, whilst the first boilers are actually at work.

The annual meeting of Messrs. British Thompson-Houston, Ltd., also makes quite cheerful reading, showing a substantial increase in orders and much better prospects all round.

The colliery industry is about the same, although the position with regard to future orders may be said to be somewhat quieter. At the present time, however, practically all the collieries of the country are fully employed, there is a slow but steady increase in the colliers' wages, the output is well maintained, in fact, is still slowly increasing, and there still remains the congestion at the docks in struggling to cope with the business in hand.

Steel Belt Driving.

The use of driving "belts" made of thin sheet steel is now progressing very rapidly in the United States, and at the present time some 1,000,000 h.p. is being driven by this method. The idea of using a steel belt was the original invention of a German engineer named Eloesser in 1908, and the principle was adopted to a considerable extent in Germany, whilst the first steel belts were put down in Great Britain very shortly afterwards by the German company, although steel belt driving has never made much headway in this country.

The steel used is a very high carbon variety, something similar to that used for clock springs, and it is rolled and ground to the size and tempered to dark blue temper. The great advantage of the steel belt drive is its extraordinary efficiency, which is over 99.75 per cent., so that the amount of power lost in transmission is practically nil. This is clearly proved by the fact that the belt will not run on a metal faced pulley without severe friction, so that the ordinary metal pulleys have to be covered on the outside with cork or some such material to make the contact, and if there were any loss of power at all by friction in the nature of sliding or rubbing, this cork composition would be destroyed immediately, whereas it runs for years without trouble. In looking at a belt running one is rather appalled by the thoughts of what might happen if the belt were to break, but it is said that this is an extremely rare occurrence, and when it happens the belt does not fly sideways at all, but simply falls flat down on the floor.

Other advantages of the steel belt drive are cleanliness, freedom from "flapping," and consequently no formation of dust and dirt, and the fact that the belts never stretch when once set. There have, however, been a considerable number of practical difficulties in the way of their application. As already stated, these belts will not run satisfactorily on metal pulleys, and according to the latest work in America it is found that the best method is to use compressed spruce wood pulleys, which is a much more satisfactory job than the ordinary cork or similar lining which has generally been used. The chief difficulty, however, has been in the making of the joint, which, at any rate so far as Great Britain is concerned, has always been carried out by using a special screw-clamping arrangement, which grips both portions of the belt and holds them together under tension whilst the joint is made by means of small rivets. It is found, however, by experience in the United States, that a much better method is to use a very fine and long lapping joint, fastened together with silver solder. The ends of the belt are chamfered off to a rough edge with a file and emery cloth, the length of the joint being at least three-quarters of the width of the belt, and then clamped firmly in place and fastened by means of silver solder, using a small amount of borax as a flux. The solder is melted by means of red hot tongs and the joint allowed to cool very slowly. When made in this way it is stated that the joint is not only as flexible, but also as strong as the belt itself, as proved erperimentally by actual breaking tests. The strain that a steel belt will stand without breaking is enormous, amounting in averages to about 275,000 lb. per square inch.

Another trouble with the steel belt is that both the driving and the driven pulleys must be absolutely dead in line one with another, or else the belt will run off at once, as it is not as flexible in this respect as the ordinary leather or composition belt. This, however, can hardly be described as a drawback, as in any case shafts ought to be dead-linable, but it is a practical difficulty when it is found, for example, that it necessitates alterations in he erection of a whole line of shafting which has been badly fitted in the past.

(To be Continued.)

TRADE SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET. AWAITING EUROPEAN EVENTS—IRON AND STEEL—HERE AND ELSEWHERE—UNION'S STEEL IMPORTS AND PRODUCTION, 1922—ELECTRICAL NOTES—RUSTENBURG'S POTENTIALITIES—TIMBER AND BUILDING MATERIALS—TENDERS FOR MATERIAL RECENTLY DEALT WITH BY JOHANNESBURG TOWN COUNCIL—LATEST METAL QUOTATIONS.

General.

There is no disputing the fact that business of every description on the Rand is at the moment very flat. This month, contrary to general expectations, has opened not too promisingly, for which, undoubtedly, recent events and the continued unsatisfactory European political situation, are mainly accountable. Commercialists, notwithstanding, do not doubt that the improvement looked for, and certainly warranted by existing Union conditions, will come along in due time. Taking a general survey of the position as it appears to-day, and judging from reports to hand from the different districts, indications are not wanting that the Union of South Africa is ripe for an upward surge, and that only outside influences, in the main, are preventing that all-round improvement which we have so long been expecting. The agricultural districts are showing up well; the farming community are getting money into their hands through the disposal of their maize crops which is already beginning to flow into commercial channels. It is also very satisfactory to learn that the prospects of the Union's wool crop for next season are very good; in short, the reports from all quarters are of a very encouraging nature. Furthermore, and this is a very important feature, it is distinctly cheering to hear from reliable sources that the banks are quite prepared to help good sound business again; the banks are now, it is said, getting a little money into their hands, which enables them to afford financial assistance to sound financial ventures—a help and encouragement which has not been forthcoming for some time back. This, in itself, said a very influential commercial man this week, is an indication that things are becoming a little easier as regards money, and it is stimulating to know that good sound commercial business can again be financed. The money that our Municipality is spending locally is also, he said, going to be of great assistance to the community; there is evidently quite a lot of work on hand, and this all means the circulation of money so much desired by merchants and all of us. The big question, the European question, which, above all else, is retarding stable business conditions overseas and here, seems to be getting more difficult to understand every day, and the Powers seem to be getting farther away from a settlement to it than ever. The Ruhr problem, this commercial captain said, was a most difficult one to get a hold on, and it was apparent to all of us what difficulties the British Government was up against. The suggested conference between Britain, America, Italy and other neutral countries, with a view to a settlement of this grave question, should meet with approval on all hands. Such a conference would be an excellent way of obtaining public opinion throughout the world, and might concretely influence France to relinquish her hold there; for the world, apart from France, is satisfied that the latest offer and guarantees made by Germany are the best she can make and fulfil under the circumstances; and the opinion of the Powers might be so strong as to bring about France's submission. One is hard put to it, he continued, to know what France's intentions really are, and why she does not put her cards on the table—unless we conclude that she has some ulterior plan in her Ruhr policy to-day. As far as South Africa is concerned, there is nothing wrong with us; the country is all right, and nothing is preventing us from going ahead but this same European political question, which is, of course, keeping the whole world from regaining normal conditions. The Union is ripe, he concluded, for an upward movement when and as soon as Europe returns to sanity—a consummation which will signify more to us and to the world generally than the never to be forgotten Armistice [illegible]. Engineering shops are steadily going on, but not at all on the busy side, just sufficient to go along with; the foundries are also fairly employed; the boiler shops have been rather quiet of late. The building trade is quite good and anticipates greater activity in the near future. Prices of iron and steel and of building materials remain much about the same. The Bank of England rate of discount has risen to 4 per cent., with a corresponding advance of sterling in the United States probable, which may mean a slight increase in the near future of the price of gold. The gold output for June, although somewhat under that for May, is, when analysed, not unsatisfactory, nor are the profits realised below what was generally expected. In commercial circles it is generally thought that there should be a steady upward movement in results from the mines from now on. But, until some settlement is come to overseas, no great hopes are expressed of the mines launching out in their purchases.

Iron and Steel.

Business generally has ruled exceedingly quiet during the past week. The S.A. Railways, however, have been buying rather largely, principally bolts, nuts and rivets, and on a scale which threatens to enhance the price of these commodities, owing to depleted stocks, in the near future. The mines, on the other hand, are not buying freely at the moment. Prices remain practically unaltered this week and need not be reprinted.

Britain: Mail Advices: Iron and Steel: The Outlook.

The tone in the market has been rather more optimistic this week, although it would be difficult to discover any improvement in business. Perhaps an increase in the number of inquiries received from India and the East, where the markets have been stagnant for some time, and a firmer tendency in Continental prices may be responsible. From the British manufacturers' point of view the probability that the Belgian works will be shortly again in a position to compete must be somewhat disappointing, but, against this may be set the circumstances that, presumably, some of them will receive supplies of cheap semi-finished material. The development of Continental competition, however, depends more upon the Ruhr situation than any other factor, and this is still obscure. To what extent the French, Belgian and Luxemburg works are receiving supplies of German coke it is impossible to say; but from the limited character of the offerings which have been received of coke it would not appear to be sufficient to enable them to work at anything like normal capacity. On the other hand the demand for all classes of iron and steel is of the lightest, and any pressure to sell at the present moment would probably result in a further depreciation in prices. Scottish works appear to be worse off for orders than the English works, and in one or two cases plant has been closed down. The possibility of American competition in the export market has been discussed at

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late, and in spite of optimistic reports of active business conditions in the United States the trade here would not be surprised at meeting with competition before the third quarter of the year expires.

At the weekly meeting of the London Iron and Steel Exchange in mail week a more confident tone was in evidence. The Continental steel prices were reported to be firmer; whilst it was stated that there was a more general tendency amongst British manufacturers to meet the market position and to grant concessions, particularly in export business.

The Iron and Steel Trade.

At a meeting of the Dudley and District Chamber of Commerce it was stated that the general condition of the iron trade was worse now than at the close of the slump at the end of last year, due largely to the increased cost of raw materials. The same thing applied to the steel trade. Belgium was exporting to this country certain classes of iron and steel at lower prices than Britain could produce them. The iron trade had not yet reached the pre-war standard of individual output.

Coke and the Pig Iron Output.

At the annual meeting of the Council of the National Union of Blast Furnacemen at Scarborough in mail week, the secretary said that the order books of pig iron producers were being well filled. Output was sold months ahead. The producers were not able to cope with the demand, because the coal owners and coke makers, who ruled the situation, were obtaining high prices from the Continent. Home industries were paying 60 per cent. more to meet the rapaciousness of the coal owners. Furnaces now in blast number 212, compared with 130 in September last.

Blister in Tinplates.

Lecturing on May 30 at Swansea Metal Exchange on "Peppery Blister in Tinplates," Professor Edwards, of Swansea University College, said that researches had led him to attribute this evil to the action of nasient hydrogen formed in the pickling process by the action of sulphuric acid on the steel sheets. His experiments had not yet gone far enough to enable him to prove his theory and eliminate blister.

Ironworkers' Wages.

Wages of puddlers, forgemen and millmen have advanced 7½ per cent. under the Midland Iron and Steel Board. The rates are now 10 per cent. above the point at which they stood when the year opened, and 50 per cent. above the basis. There was a steady increase in output during the first four months, the tonnage in March and April being well up to pre-war standard.

Quotations.

Pig Iron.—Cleveland, Foundry No. 1, 127s. 6d.; No. 3, 117s. 6d.; No. 4 forge, 110s.; mottled, 107s. 6d.; hematite, mixed Nos., 117s. 6d. Finished iron and steel.—Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £9 10s.; hard, £10 5s.; bars and angles, £10; tees, £11; joists and channels, £10 5s.; sheets, singles, £14 10s.; doubles, £14 10s.; lattens, £15 5s.; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots; mild steel fencing, 1 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 19s. 6d. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 24s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised 26s. per cwt.; black, 21s. per cwt. Bolts and nuts, 50 per cent. discount. Staffordshire common bars, 14s. 3d., and galvanised corrugated sheets, 23s. per cwt.

Germany: Sheet Prices.

The blast furnaces of the Siegerland are making hardly anything but sheet iron now, for which only Siegerland ironstone is used, while for foundry pig Lahn and Dill ores can also be used. But the demand for pig iron is not increasing much, and iron founders seem to be well stocked. The sheet mills of the district are booked well ahead for thick sheets, and are asking from 12 to 16 weeks for delivery; orders for thin sheets can be executed within three or four weeks. As Czecho-Slovakian sheet bars have to be used, which are quoted now (mid-week) at about £8 to £9 per ton, the export prices for thick sheets (about £9) and for thin sheets (about £10 6s.) leave only a very small margin of profit.

Conditions in Czecho-Slovakia.

The boom in pig and rolled iron appears to have reached its end, and new orders are very scarce. The state of the engineering industry also is unfavourable. In 1922 the number of men employed in this industry fell by 25·87 per cent. and the output by 38·80 per cent. Since then production has improved a little, and the hands formerly on short time now have more work.

Sweden: Rustless Iron.

The Ferrolegeringen A.B. of Trolhattan, Sweden, is making rustless iron by a process invented by a Swedish metallurgist, which, it is said, brings the cost of the finished product down approximately to that of ordinary commercial mild steel, when account is taken of the exceptional strength and durability of the new material, whereby lighter gauges can be used, and of the saving of the expense of rust-resisting coverings. The process is electrical, and the iron is claimed to be refractory to rust and corrosion through acids and corrosine liquids and an economical substitute for mild steel. The company has been manufacturing ferro-chrome and other alloys of steel since 1913.

Australia: Babcock and Wilcox's New Works.

Babcock and Wilcox, Ltd., have opened a manufacturing branch at Regent's Park, near Sydney, where they will manufacture the company's products, including water-tube boilers, mechanical stokers, pumps, feed water heaters and general structural steelwork. The foundry is equipped for the production of castings of all sizes up to twelve tons in weight. Contracts for boiler plants and other work are in hand from New South Wales, Queensland and Victoria.

Russia: Manganese Ore.

With the object of improving the export trade in Caucasian manganese ore, the Soviet Government intends to amalgamate the two export organisations which are at present conducting the business (one at Poti, in the Caucasus, known as the Chemo, and one, the Export Buda, at Kharkoff, in Southern Russia, for the ores from the Ukraine). The vessels of the Russian Volunteer Fleet are to be used for carrying the ore to London, with the object of saving freight. The Caucasian production in 1922 is stated to have been about 250,000 tons, which was less than half the average pre-war rate. It is claimed that the Caucasian ore could now be laid down in England at much less than the price of Indian and Brazilian.

The Manufacture of Electric Lamps.

Negotiations are said to have been carried on in Germany by one Holzmann, representing the Soviet Trust for Electrical Industries (Glav-Electro), and representatives of the Osram Co., the Phillips Lamp Co. of Eindhoven (Holland) and the American General Electric Co., the object being to induce the three foreign companies to take in hand the manufacture and sale of electric lamps in Russia. Conditions are said to be: The Soviet is to hand over to them all establishments for the manufacture of electric lamps in Russia, as well as the available stock of bulbs, computed to be about 400,000. The aggregate value of the plants and stock is put down at two million gold roubles (£200,000).

United States: The Pig Iron Market.

Another large furnace has been [illegible] near Youngstown, which makes 13 furnaces active in that district out of 40. Foundry grades are quoted at about $2 per ton lower, or $28 Western Pennsylvania, Eastern Pennsylvania and Buffalo. The Eastern Pennsylvania steel works are inquiring for 20,000 tons of basic iron, which the trade expects will be obtained at $28. Owing to the recent heavy deliveries of pig iron, which included considerable tonnage of low-priced contract iron, [illegible] and [illegible] is beginning to appear. The production of pig iron in May constituted another record, being 3,867,694 tons, compared with the April production of 3,549,734 tons. The output is thus equivalent to between 17,000,000 and [illegible] tons per annum, the bulk of it being steel-making pig iron. Steel makers have dropped their premium quotations, and the market is now at $3 to $3.25 for 10 gauge, $3.85 to $3.80 for 28 gauge, and $4.85 to $5.00 for galvanised. The wire-rod mills are still working at high pressure.

Railway Material.

The Pennsylvanian Railway has placed orders for 20,000 tons of rails, and a Canadian railway has placed an order for 11 locomotives with the American Locomotive Company.

Wages.—Owing to the great scarcity of puddlers the basic price has been advanced $1 to $13·50 for the ensuing year by the Western Bar Iron Association.

Non-Ferrous Metals.

Copper, firm, 15c.; tin, easy, 41·50c.; lead, quiet, 6·35c to 7c.; spelter, steady, 6·40c.

Belgium: Pig Iron.

The output still remains at a low point for want of proper coke supplies, and until these become normal producers refuse to accept heavy engagements, and will not make further reductions to obtain business, although potential buyers consider the price of steel-making iron still too high. There has been a revival in the demand for steel for quick delivery, both for local consumption and for abroad. The demand for iron is rather more lively. There is a considerable increase in the demand for thin sheets. In heavy plates the situation is satisfactory.

Second-hand Machinery Market.

There are still numerous inquiries in the second-hand market for engines and boilers. With regard to battery spares there are none to be had, the mines have had to purchase new lately. A lot came into the market a few days ago, but they were snapped up. Second-hand steel plates are very scarce, as there have been no cyanide tanks in the market for some considerable time. [illegible] are rather scarce and so are 16 to 20 lb. second-hand rails, but a very considerable quantity of this class of material is expected to be shipped out from the Western Front (France and Belgium) very shortly. A big parcel of this stuff has been offered recently in Johannesburg, but the prices asked were a little above what it would cost to land other material, so that the Western Fronters will have to cut their prices, which they intend doing, to meet the market in this country. There are still orders coming in from outside places, such as Nairobi, Belgian Congo and Rhodesia, and several orders have come up from Capetown lately, so that it is expected the second-hand market will [illegible] a flutter towards the end of the month. Second-hand building materials have been scarce of late, but one prominent dealer in town has purchased some [illegible] buildings, which are now being demolished and sent up here, so that there will not be a scarcity in this line; otherwise, there is a tone of inquiry about.

Union's Steel Imports and Production, 1922.

South African Steel imports during 1922 amounted in value to £389,794. Steel manufactures produced and consumed here were valued at £10,249.

Brevities.

Owing to the continued trade depression, the Cartsburn Foundry and Cartsdyke Engineering Works at Greenock are to be closed for an indefinite period.

The Unemployment Barometer.

The number of persons on the registers of the employment exchanges in Britain wholly unemployed on May 28 was 1,221,310. This was 13,905 more than in the preceding week, but 261,578 fewer than on January 21, 1923.

Electrical Notes.

Things in the electrical goods section are at the moment not too brisk; an improvement is, however, anticipated shortly, but at the moment business is on to the slow side. No alterations have to be reported generally; in one or two instances, however, efforts have been made to realise against bills.

Big American Electricity Scheme.

A plan to electrify the whole of the United States has recently been announced. The project, costing £1,000,000,000 to complete, includes the electrifying of all railways, street transportation lines, factories and other power-using units in one immense system. The plans have been assured of the financial backing of the biggest electrical corporations.

An electric current of two million volts was recently generated in the laboratory of the General Electric Co. of America. This is the highest voltage ever obtained, and the laboratory experts think that the transmutation of matter is now no longer beyond the reach of science.

Coming Rustenburg Industries.

Reports from the Rustenburg district are very favourable in respect of the banket reefs and the permanence of the Batavia gold values over many miles of country. It is, of course, yet too early to gauge the actual position, but with gold, diamonds, coal and fairly large iron deposits, not to speak of other minerals, the potential value of Rustenburg district seems assured. These are, however, not "next month's" propositions, but that they will eventually be worked, and profitably worked, in the perhaps near future seems certain.

Timber and Building Materials.

The timber trade is progressing fairly, with stocks nearly normal, excepting some sizes of scantlings still on the short side, which shortage will, it is expected, soon be relieved. Prices remain unaltered. Building operations are satisfactory, with prices of bricks and other materials, although practically unchanged, firm rather than otherwise. It is satisfactory to note that the building trade dispute in Capetown, although not immediately affecting Johannesburg, has been averted by the operatives accepting the masters' terms. It is the reverse of satisfactory, however, to learn that tenders have been invited from England in respect of the new Cape University, complaints about which have been rife in building circles lately. It is stated that bricks, for example, from England can be delivered at the Cape cheaper than from the Transvaal; so, evidently, should the contract go oversea, *all* the building material will come from England, and all the money—which would be of incalculable advantage to the Union at the present time—be spent out of South Africa. With the present unemployment here and none too flourishing conditions generally, these complaints are well founded, and it seems up to the Government to reconsider their action and to support South African industries even at a slight pecuniary sacrifice. Timber quotations are unaltered from last week.

Second-hand Iron and Timber Yards.

These remain without much business just now; inquiries are fairly good, but owing to the scarcity of material, which dribbles in very slowly, very few transactions can be put through. Prices for second-hand iron are 1d. to 6d., for timber 6d. to 8d., according to quality.

The Truth about Torbanite—All-Cyanidation and Thievery—
T.G.M.E. Affairs—Rhodesian Mining Notes.

Industries The South African Commerce
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
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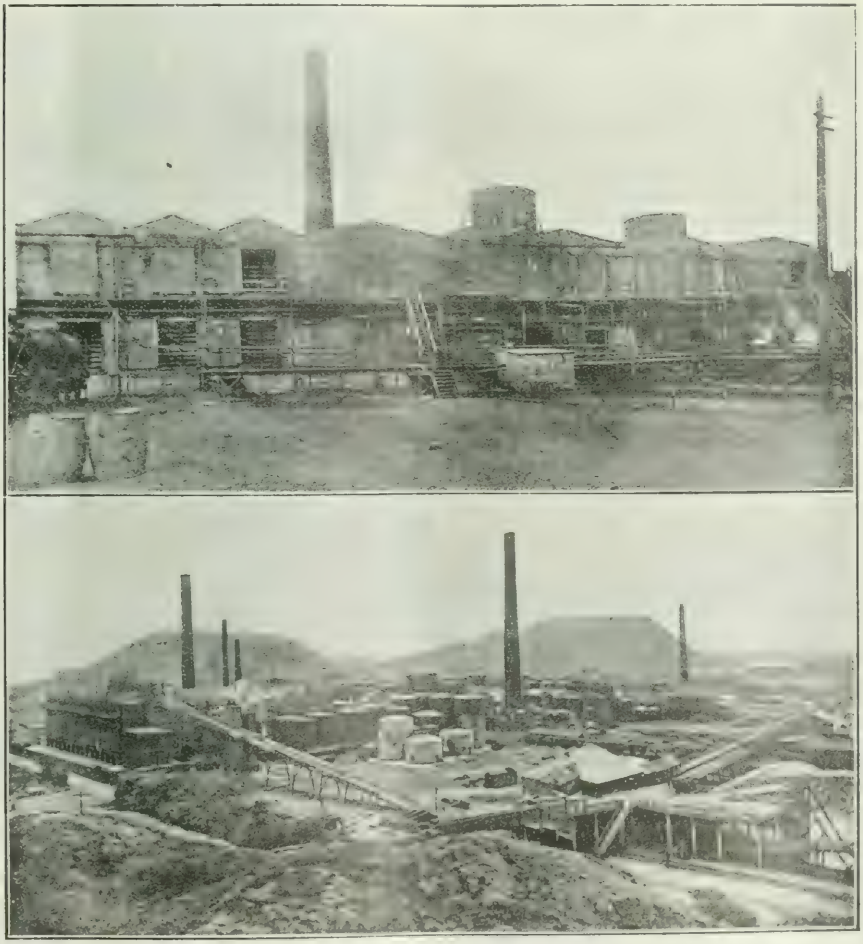
A Successful Oil Shale Industry.



Two views of the famous Pumpherston Oil Shale Works. The top picture shows the sweating stoves or houses for the production of wax. The lower picture is a general view of the works.

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Mining and Financial Affairs of the T.G.M.E.

BIG DROP IN PROFITS CAUSED BY THE PASSING OF THE GOLD PREMIMUM—HEAVY EXPENDITURE ON PROSPECTING—PROSPECTS DEPENDENT ON RESULTS.

The following figures concisely summarise the results won by the T.G.M.E. in the last two financial years:—

	31/3/1922	31/3/1923
	For Year ended	
Tons milled	186,630	18[illegible]
Yield per ton milled, dwt.	6·49	[illegible]
Revenue per ton milled, shillings	32/8	29/10
Mine working costs per ton milled, shillings	30/-	29/9
Mine working profit per ton milled, shillings	2/8	[illegible]
Mine working profit	£24,740	£111
Sundry revenue, less European and Head Office expenses, etc.	£3,676	£1,184
Total profit	£28,416	£1,598
Development footage	49,405	79,084
Ore reserve, tons	673,765	625,800
Ore reserve value, dwt.	8·0	8·3

The Consulting Engineer, Mr. J. Whitehouse, in the course of his annual report, writes:—Operations resulted in a mine working profit of £111, as compared with a profit of £24,740 in the previous year. This decrease was due to the fall in the price of gold from an average of 100s. 8d. per oz. in the year 1921-22, to an average of 88s. 4d. per oz. in the year under review. This was equivalent to a loss in revenue of £39,067 on the gold output. Although owing to the decline in the price of gold the year's operations resulted in only a small profit, the tonnage was maintained, and the yield improved by 0·28 dwt. per ton milled. Included in the working costs is an exceptionally heavy charge for prospecting work. During the year, owing to the good supply of native labour, the prospecting footage was greatly increased, and an amount of £30,182, or 3s. 3d. per ton milled, was charged to working costs, as compared with £16,219, or 1s. 9d. per ton milled, in the previous year. For the same reason development was also accelerated, and a total of 79,084 feet was accomplished. The expenditure charged to working costs on this account amounted to £62,351, or 6s. 8d. per ton milled, as compared with £46,337, or 5s. per ton milled respectively, in the year 1921-22. Working costs were therefore charged with an increase of 3s. 2d. per ton milled on account of prospecting and development work, as compared with the previous year. The results of the prospecting work are set out in detail in the General Manager's report. The extended development programme did not result in a maintenance of the tonnage in reserve, there being a decrease of 47,965 tons, but, in view of the increased value of 0·3 dwt. per ton, the position can be considered as moderately satisfactory. This increase is encouraging in face of the continuous decline in value in recent years. The reduction in the value of the reserve at Elandsdrift Mine was due to the rich outcrop portion of the "Blow" having been worked out. Sufficient development work has not yet been done to prove how valuable an asset this ore body may prove to be in the future, but the high values disclosed on the fourth intermediate level, though [illegible], are encouraging. At the Vaalhoek Mine the immediate prospect of profitable operations is not good. However, every endeavour is being made to open up payable ore, and a new shaft is being sunk for this purpose. With regard to the future milling operations of this company, it should be pointed out that the recovery obtained cannot, under present working conditions, be commensurate with that called for by the value of the reserves. Much of the high grade ore included in the reserve is at present unavailable, and a considerable proportion of the ore milled is drawn from development faces and other low grade sources. For this reason it is not expected that the recovery for the current year can be materially increased. As regards future expenditure, a considerable reduction in working costs cannot be anticipated except at the expense of the prospecting and development programme. The General Manager emphasises in his report that it is of the greatest importance that this work should be pushed on since the future of the company entirely depends upon the results of this work. In view of these factors, and the return of the price of gold to near standard, it cannot be expected that operations in the immediate future will show much improvement. As long, however, as prospecting can be continued on a scale commensurate with the company's extensive holdings, there is a possibility of further discoveries which would improve the future prospects of the company.

General Manager's Report.

In the course of his report the General Manager, Mr. R. A. Barry, writes:—"Advantage has been taken of the good supply of native labour offering throughout the year to push prospecting operations at as many points as possible. Outlying farms like Goedgeloof No. 110, with an area of close upon 10,000 acres, and Onverwacht No. 208, with an area of some 6,500 acres, have had much time and money spent on them during the year, but, unfortunately, no gold occurrences of value has been found on either farm. Certain indications of the existence of asbestos have been noted, but no work has been done thereon as yet. Operations are being continued on Onverwacht, but prospects are not encouraging. The heavy rain which fell between December and March severely handicapped all prospecting work, and added to expenditure. The total expenditure for the year on prospecting amounted to £30,182, showing an increase of expenditure under this head of £13,963.

Having given a summary of prospecting results, the General Manager continues:—

This summary reflects the increased activity and the large areas covered during the year, activity which has added considerably to working costs, as all but a small portion of such work is now charged out to mine working costs. Of necessity much barren ground is traversed, but the information gained has proved useful, and, by systematic methods, we are enabled gradually to eliminate sterile areas, and so concentrate more closely upon those in which there is some promise of payability. With the large area of country to exploit, heavy expenditure over a considerable space of time is inevitable, but guided by skilled experience and methods, there is every hope of ultimately disclosing further occurrences of value. On the Portuguese Horizon, south of the Chi Mine, indications encourage the hope of further favourable developments, but progress is slow in this difficult country. In the area adjoining the Old Beta Mine, prospecting has revealed some very satisfactory values, and a small mine has been opened up, and will shortly be supplying rock for our Central Mill. On Columbia Hill, on the lower [illegible] of the Shales, payable areas, of a limited extent, have been opened up by prospecting. In the Duke's Hill Tribute area, secured under a tributing agreement, prospecting operations conducted throughout the year have disclosed a limited tonnage of payable ore, with some hope of an ultimate further addition thereto. Extended work on areas held by the company under option of purchase and tribute on the extension of our Columbia Hill Mine, and also in the areas adjoining and beyond Beta Mine, was so universally discouraging that these options have been definitely abandoned and work discontinued. Considerable shaft sinking was done during the year to test low lying reefs, but without disclosing anything of value. Further work of this nature remains to be [illegible] in this country [illegible] area, [illegible] has been [illegible] suspended pending the [illegible] of the heavy flood water due to abnormal rains. A [illegible] programme of prospecting in [illegible] areas [illegible] to be [illegible]. This will take time and money, and [illegible] be attempted when sufficient native labour offers, after satisfying the general needs of the mines. The Government is constantly urging this company, under threat of [illegible] of leases, to do further prospecting. Hasty [illegible] of unproved areas can only do harm to the owner and to the State, since the work of prospecting to-day, following on all the work of the past, calls for a heavy and sustained expenditure which can only be faced by the organised companies, and they must be [illegible] with great pluck and determination, encouraged and sustained by the hope of an adequate gain in the event of their efforts proving successful. Forfeiture, before a real discovery is made, not only unfairly deprives the owner of some of his rights, but puts a damper on prospecting operations conducted on a large scale; and only large scale prospecting operations can bring hope to open up further deposits of real moment.

Elandsdrift.

At Elandsdrift over 7,000 feet of work was done in prospecting, representing an increase of nearly 100 per cent. on the previous year. Working costs at this mine were charged with 1s. 5·9d. per ton milled on the score of prospecting work. In the North-East Section, at "F" Adit, situated some 1½ miles north-east of our existing mine, encouraging values were met on the Upper Reef of the Elandsdrift series. Payable values have been continuous for a length of 150 feet, but, owing to a roll in the formation which brought the reef under heavy water, it has not as yet been possible to prove the lateral extent of this payable reef except for about some 60 feet. Though this occurrence cannot as yet be too greatly depended upon, the indication is an encouraging one. Work elsewhere disclosed nothing payable, and for the present efforts will be mainly concentrated on the encouraging area indicated above. Useful information has been gained by boring with a shot drill to the north and west of our mine. Reef was located in five of these holes, but values were not encouraging.

Vaalhoek.

The total prospecting footage in this area amounted to 1,794 feet, and nothing of value has been disclosed. With the heavy water conditions obtaining, it is impossible to prospect much in this area without the provision of considerable power, the expense of which is apt to prove prohibitive. Efforts are being mainly concentrated on proving the extension of the payable area in the immediate neighbourhood of the River Section Mine, where water unfortunately makes progress very slow. Boring in this country has not yet been attempted, but the matter is under consideration.

General.

Prospecting in this district is becoming increasingly the task of a big, powerful organisation. Unproved areas are still of great extent, but are being systematically dealt with. Indications in various directions are sufficiently encouraging to warrant the continuance of the operations, but the large extent of the area to be covered, and the constant and increasing difficulties to be contended with, call for the utmost patience.

Development and Mining: Central Mines.

With the aid of a plentiful supply of native labour, development work has been pushed ahead at all points continuously, and was only hampered towards the end of the year, when the abnormal rains created severe floods. Altogether some £39,807 was spent on development work at the Central Mines area during the year, which represents a charge of 5s. 7½d. per ton milled. Much of the work was difficult and expensive, especially during the months of the floods, but on the whole the position has been well maintained, for though ore reserves show a drop of some 11,000 tons, yet the total value has increased.

Duke's Hill Mine.—Close upon 11,000 tons of low grade Bothwell reef has now been opened up in the old mine, and over 8,000 tons of richer reef, averaging 8·27 dwt. in the mine proper. This tonnage will be gradually depleted.

Beacon Hill Mine.—Nothing fresh of value has been opened up here, and the reserves amount to some 16,000 tons of just over 7 dwt. value.

Peach Tree Mine.—Little more than pillars are left in this mine.

Iota Mines.—These mines are a dying unit, ore reserves are gradually diminishing, and to-day stand at just under 6 dwts. in value.

Theta, Theta Extension and Theta North Mines.—On balance these mines show a small increase in ore reserves, which average about 6·8 dwt. in value. The reef continues thin and patchy in values, and the increasingly scattered nature of the work, and heavy cost of maintenance, is a very difficult feature.

Brown's Hill Mine.—Ore reserves here will show a progressive decrease, as there is practically nothing further to develop.

Graskop Mine.—Development has just about balanced mining during the year, ore reserves being maintained at their previous figure. The feature of the mine is its heavy water and great mining difficulties.

Jubilee North Mine, Portuguese Reef.—Development work here has resulted in a considerable addition to the ore reserves, which now stand at well over 17,000 tons valued at close upon 9 dwt. Some 6,000 tons were sent to the mill from this area during the year. The present promise of the mine is encouraging.

Columbia Hill Shales Mine.—Considerable success has been achieved here. Ore reserves show an appreciable increase in both tonnage and value, and now stand at close upon 89,000 tons, valued at 9·6 dwt., despite the fact that over 25,000 tons were sent to the mill from this area during the year.

Ponieskrantz North Mine, Portuguese Reef.—Development results have become increasing discouraging in this area. As headings pushed further into the solid formation, so the payable reef disappeared. With the disappearance of the gold premium it was decided to eliminate all ore under 5·5 dwt. from the pay reserves in this area. This occasioned a heavy reduction in reserves, which now stand at just over 60,000 tons, valued at 5·6 dwt.

Chi Mine, Portuguese Reef.—This mine has been coupled up to the Central Mill during the year, and has been sending rock to the mill for some little time now. Development work here has proved most satisfactory, and good values are showing up in the centre of the hill. Plans are afoot for further developing this area at an increased speed, and providing better facilities for handling the rock. This, of course, necessitates a considerable expenditure, which, however, the position of the mine to-day warrants.

Beta Mine.—This area has been turned over from the prospecting stage to mining proper. We now have over 25,000 tons of pay ore here, worth 6·62 dwt., with a hope of further additions. Mining conditions are not too easy, as the reef is narrow and water is troublesome. The work of connecting this area to the mill is now well advanced, and has added considerably to the expenditure at Central Mines during this period.

Elandsdrift Mine.

The underground condition of the mine has improved greatly, and as a result both whites and natives give better efficiency. There is, however, a great deal of new work ahead, and will be for some time to come, and, with all the heavy extra expenditure involved in pushing development and prospecting, working costs must necessarily continue at a high figure. There has, however, been a satisfactory decrease during the past twelve months. The Lanz engine steam plant is now available, and meets the needs partially whenever water power fails, but this form of power is expensive. As yet there is no definite promise of additional electric hydro power in the district, greatly though the success of all ventures depends thereon. Water in the mine shows a tendency to increase in depth. Ore reserves show a small increase in tonnage, but have fallen off slightly in value. However, development on the lowest level gives good values over a satisfactory thickness as the reef dips to the west, and there is some hope that the Blow may again carry good values in depth, though this is as yet nothing more than "a hope." We have been greatly handicapped by East Coast Fever Regulations during the whole year, but it is now hoped that these may be removed shortly, no fresh outbreak having occurred.

Vaalhoek Mine.

Ore reserves have decreased somewhat in tonnage, but as the severe floods put a stop to all development during the closing three months of the year, and as values have increased by ½ dwt., the net position must be considered satisfactory. Development and prospecting combined accounted for a charge of 11s. 1·4d. per ton milled over the year. Heavy expenditure has been incurred in connection with the sinking and equipping of the new shaft. Mining difficulties in bad ground and against heavy water continue to hamper us, but on the whole good progress has been made, and the increase in values is an encouraging feature.

Ore Reserves.

The following are the ore reserves calculated as at 31st March, 1923: Central Mines, 474,140 tons, 7·32 dwt. per ton; Elandsdrift Mine, 80,000 tons, 14·08 dwt. per ton; Vaalhoek Mine, 71,660 tons, 8·30 dwt. per ton. These figures show a decrease in tonnage at Central Mines of 44,484 tons, but there is a satisfactory increase in value of 0·34 dwt. per ton. At Elandsdrift the tonnage has increased by 3,094 tons, but there is a drop in the average value of 0·37 dwt., due chiefly to the rich outcrop portion of the Blow having been all consumed. At Vaalhoek tonnage has decreased by 6,575 tons, but values have increased by 0·5 dwt. per ton.

Arboriculture and Plantations.

Old Plantations.—These older plantations have produced over 55,000 tons of timber for our mines.

Wattle Bark Plantations now total 3,809 acres, all productive, but with the present ruling price of bark profits are not very large. It is hoped that as trade in Europe becomes more settled, prices will improve. During the year sales of some 740 tons of chopped bark and 5,336 tons of timber were made, which yielded a net profit of £829 18s. 3d. East Coast fever quarantine regulations have added to our difficulties and costs throughout the year.

Pines and Eucalyptus Plantations.—There are now about 1,485 acres under the better classes of eucalyptus and pines, carrying in all a total of over two million trees. The whole of this area established under trees, completely fenced and well grown, has cost us just over £10,000, or, say, £6 17s. 3d. per acre, a highly creditable performance, and one which adds materially to the value of your ground. A vigorous policy has been established for adding to these assets each year.

Nurseries.—Three successful nurseries have been established, and a large number of trees are now ready at each centre for transplanting.

Staff.—On an average six white men and 360 natives are now continuously employed on our plantation work, which, from a small beginning in 1919, has now assumed important proportions, and is one of the largest tree planting schemes in the country. The pre-eminent suitability of much of the Companys' land for tree growing on a commercial scale has been demonstrated, and it is hoped that the energy displayed will meet with sympathetic treatment from the Government authorities, especially in the provision of road and rail facilities.

Native Labour.

Native labour has been abundant throughout the year and every effort has been made to take advantage of this happy, but unusual, condition in every department. Much work has been done which normally would have been spread over a considerably longer period.

General.

The premium on gold has fallen practically to vanishing point. But though stores have also shown a satisfactory decline in price, indications are now noticeable that the bottom has been reached in this direction. With the unsatisfactory condition of Europe a rise in the price of some commodities is not improbable. The men, realising the difficulties of this undertaking, and the very narrow margin on which it has to work, have co-operated loyally in efforts to reduce costs and make the future more assured. With this spirit abroad, it is hoped that many of the difficulties will disappear. I would again record my appreciation of the efforts of the various managers and staffs at each centre to secure the best efficiency and results during the year.

The Cam and Motor Dividend.

If any man feels more happy than another in regard to the maiden dividend of the Cam and Motor Gold Mining Co. it should be Sir Abe Bailey (says a London paper), who sees in it the beginning—although perhaps on a small scale—of a practical return on the money which he provided, and which has transformed the prospects of the company from despondency to reasoned and justified optimism. The distribution itself is one of 1s. 6d. per share (interim) less tax, and if it seems disproportionate to the present market quotation of about 2¼, it must be borne in mind that in all probability the final dividend for the year will be upon a more generous scale, the market anticipating the latter at 3s. per share, with a possible total of 10s. for the following year. The great thing, of course, is that the company is at last out of debt, and that a large proportion of the abnormally rich ore opened up in the lower levels has not yet been drawn upon, and remains as security for future distributions, whilst developments continue highly satisfactory.

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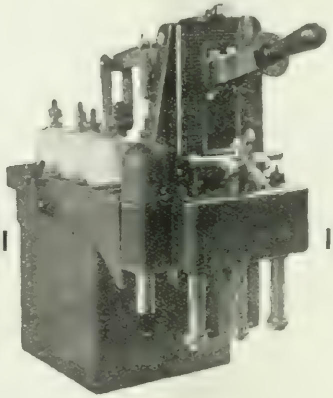

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South Africa and the Petroleum Problem.—II.

THE OIL INDICATIONS IN THE KARROO AREA—THEIR PROBABLE ORIGIN—THE IMPORTANCE OF THE CRETACEOUS BEDS.

Small seepages of oil in the vicinity of masses and dykes of dolerite, as well as the occurrence of oil in the dolerite itself, have been observed in different parts of South Africa, mainly if not entirely associated with rocks of the Karroo System, for many years past. Just before the Anglo-Boer War a great deal of interest was displayed in phenomena of this kind that were to be seen in the country around Van Wyk's Vlei, between the Orange River and Carnarvon, in the Cape Colony. A considerable area of ground was taken up for prospecting purposes by some Kimberley people, and a result of this activity was apparent later on in the deep boring operation that was begun in that neighbourhood after the war and carried on in the face of many difficulties and much adverse geological opinion until quite recently, when a depth of about 6,000 feet is reported to have been reached.

A great many thousands of pounds have been spent in an investigation of these oily seepages, impregnations and the rest, during the last 30 years, and the expenditure is still going on in various parts of the Free State and probably elsewhere in the Union. It is rather regrettable that the Geological Survey has not had the opportunity or the means to make a thoroughly scientific examination of these phenomena, so as to settle once and for all the question as to their actual significance and value. A vast amount of evidence has already been collected, in one way or another, largely by means of boreholes, but it is doubtful whether much of this has been recorded in such a manner as to make it really useful for the purpose of the Survey.

Indications in the Bethlehem District.

The only report, that is known to the writer, in which the occurrence of oil associated with oil in the Karroo rocks has been discussed by any of the Union geologists at length, is that which was made by Mr. A. L. Hall, M.A., F.G.S., upon the occurrence at Madrid No. 281, in the Bethlehem district of the Orange Free State, and which was published in the "Transactions of the Geological Society of South Africa," in the twenty-fourth volume of their transactions, in 1921.

Various inspections and reports have been made by the Survey in connection with the boring operations near the Orange River, above referred to, but these have only been made, as far as the writer is aware, during the final stages of the enterprise.

It would be interesting, no doubt, to give an account here of the many well-known places where these so-called indications of petroleum have been found and opened up, but space does not permit of even a brief reference to them. It would be of interest, also, to quote the opinions of various geologists of repute, beginning with those of Mr. Cunningham Craig, B.A., F.G.S., with reference to these indications, but it may be said that the majority are pretty much the same as those that are expressed in the final remarks of Mr. A. L. Hall with respect to the occurrence at Madrid. In the introduction to his report he says:—

"Recent prospecting operations in the Bethlehem district have located an occurrence of crude oil in igneous rocks, which, while apparently falling into line with similar deposits in other parts of the Union, is in some respects unique and therefore deserves to be recorded."

At the end of his report he says:—"The following conclusions are justified:—

"(1) On the top of the horizontally bedded Cave Sandstone at an elevation of approximately 6,360 feet above sea level rests a stratum of amygdaloidal basalt which can be traced across Madrid and several neighbouring farms.

"(2) This basalt has a proved maximum thickness of 12 feet on Madrid, where it has been shown to be oil bearing, the 'oil' occurring in scattered pockets of a dark brownish black tarry liquid.

"(3) The impregnation of the basalt belongs to a period subsequent to that of the formation of zeolite, and one effect has been to partly or completely alter the minerals originally filling the vesicles into a black amorphous mass bearing a general resemblance to coaly matter. Certain phases of the resulting rocks are unique.

"(4) These oil indications are secondary and most likely due to the natural distillation from oil shale by vertical basic dykes.

"(5) It is probable that the district is underlain by one or more oil shale horizons, that of Impendhle district would be at a depth of roughly 1,000 feet below the Cave Sandstone.

"(6) The formations met with belong to the Stormberg Series, are very regularly and almost horizontally bedded, and in the total absence of folded structures the chances of striking artesian oil wells are remote.

"(7) In its essential features, the Madrid occurrence corresponds to similar phenomena known from a number of other localities, but the scale of impregnation appears to be greater than any hitherto recorded."

The basalt referred to shows "indications of oil in the form of a strong paraffin-like smell, smears of dark tarry matter or small pockets of dark brown liquid bitumen (maltha) in freshly broken ground," and the indications generally are typical of those that are to be found almost anywhere in the Karroo System.

The Imperial Institute Monograph.

The following brief summary of petroleum prospects in South Africa was given in the monograph on petroleum which was published by the Imperial Institute in 1921:

"The oil possibilities of South Africa were investigated by Cunningham Craig in 1912. He reported that favourable geological structure is found only in a narrow belt at the southern edge of the Karroo System, although north-eastern Natal requires examination in this respect. He considered the Klipplaat area (southern Karroo) worthy of detailed examination, although he was not sanguine with regard to the prospects of finding oil there. As an outcome of this report, additional investigations were carried out in the Klipplaat district for the Geological Survey of South Africa by A. W. Rogers, who concluded that deeper boring south of the main outcrop of the Beaufort beds would not be successful in finding oil, that it is doubtful whether there is oil to be got from the northern area occupied by the Beaufort beds, and, finally, that there is insufficient evidence of oil under the Karroo to justify deep boring. In the district immediately surrounding Port Elizabeth, the geological formation is said to be similar to that of the Caucasus belt, and it has been proposed to sink a test well about 20 miles from the town. Traces of oil are reported to have been detected at various places in the Orange Free State, but the indications appear to be the result of igneous action on bituminous shales. Traces of petroleum are stated to occur near the junction of the Limpopo and Umzingwani rivers in Rhodesia."

It will be noted that the geological formation in the neighbourhood of Port Elizabeth is said to be similar to that of the Caucasus belt, in which such large pools of oil have been discovered in Russia. The test well and other borings in the district, so far as the writer of this article is aware, have not given any evidence of value. The reference is important, however, because it draws attention to the Cretaceous beds of the Coastal System, which make their appearance as small patches and strips in the Cape Colony and Natal and finally widen out as they stretch northwards until large areas are found along the sea coast in the territory of Portuguese East Africa. They have been drilled to a small extent, and with some success, on the banks of [illegible] in the district of Inhambane.

Oil in Portuguese East Africa.

In the record of a borehole which was begun on the 1st May, 1907, and abandoned on the 25th January, 1908, after an accident to the drilling tools, it is stated that oil showed freely at various depths, and traces of bitumen similar to that which is found abundantly at the surface in the vicinity. There are no signs of dykes of volcanic intrusion. Compared with these indications of oil, and sufficient evidence has been obtained to justify a much more systematic prospecting of these Cretaceous beds in that territory, particularly towards the north, where Rhodesian geologists have noted the existence of the anticlinal structure which is so important a condition in the natural accumulation and storage of petroleum underground.

Some details with reference to the driller's log of the borehole above referred to, and some description of the Cretaceous beds in South Africa will be given in the next article.

Cape Minerals.

(From a Correspondent.)

It is expected that Klipfontein, near Hopetown, will be thrown open as an alluvial field some time this month. Meanwhile the diggers who recently migrated to another of Pringle's farms, Klein Magouw, are expecting that farm to be closed very shortly, as the finds there last month amounted to about £5,000 worth of stones. On Higgs' farm, Brakfontein, the finds for the last few weeks have averaged £400 to £450 per week, the stones being mostly small, but of good colour and very uniformly distributed, so that there were very few blanks. The largest stone so far found there was 32 carats. When Brakfontein is closed, as it will be, Mr. Higgs has another farm ready for exploration.

When one considers that a huge department store in a city can be almost entirely rebuilt while actual buying and selling takes place uninterruptedly, it seems strange that all these diggers, who have by their pluck and energy proved the value of a farm, should be turned out willy-nilly, because a couple of Government surveyors have to come and lay out claims. It is very lucky that the owners, Messrs. Higgs and Pringle, have been able to provide for such a contingency, as the authorities seem to care very little what happens to these unfortunate people when they are obliged to give up work while the farms are prepared for being thrown open.

Galena.

The deposit of galena on [illegible] is being actively worked again by a Johannesburg syndicate. They have about 50 natives working and wagon loads of ore are already coming in to be railed to Prieska, about 30 miles from the mine.

Blue Asbestos.

All the mines in the Prieska district are being worked, but the prices paid to the natives are very low, the market for short blue asbestos being dead, caused by the fall of the mark.

White Asbestos.

A discovery of this mineral is reported from about 12 miles from Prieska, but few particulars as to extent are available. Samples show it to be proper chrysolite asbestos in serpentine, the fibres being of good length and quality.

Mining Men and Matters.

With deep regret the whole community heard of the death of Mr. Charles Wentzel last week-end. The late Mr. Wentzel was one of Johannesburg's leading citizens and his passing is widely mourned.

* * *

News has been received by cable that F. C. C. Blair Hook, son of Mr. and Mrs. Godfrey Blair Hook, of the E.R.P.M., has taken his final degree in medicine at Edinburgh. Dr. Blair Hook is an old Andrean.

* * *

Mr. C. F. Hutton, Inspector of Mines, Germiston, has received a cable giving news of a similar success to his nephew, Mr. D. Macaulay, son of the late Dr. Macaulay.

* * *

The following important administrative mining industry changes will have effect as from January 1, 1924:—To be General Manager of the Transvaal Chamber of Mines, Native Recruiting Corporation, Ltd., and Witwatersrand Native Labour Association, Ltd.: Mr. W. Gemmill. To be Native Labour Adviser to these bodies: Mr. H. M. Taberer. To be Assistant Native Labour Adviser: Mr. H. Wellbeloved. To be Technical Consultant: Mr. F. G. A. Roberts. To be Legal Adviser: Mr. E. L. R. Kelsey. The official statement as to these appointments is as follows: "A reorganisation of the administration of the Transvaal Chamber of Mines and its allied bodies has been decided upon, with a view to unifying the head office administrations of those bodies and effecting economies, in line with the economies effected on the mines and in the group head offices. The Chamber will act as Secretaries to its various subsidiary concerns, and it is expected that the unification of the administrations will result not only in better co-ordination and efficiency, but in a considerable saving of cost." We offer our sincerest congratulations to Mr. Gemmill on his new appointment.

The
Bulawayo Chronicle

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Amalgamation, All-Cyanidation and Thievery.

PRECAUTIONS AGAINST ROBBERY IN GOLD-TREATMENT PLANTS MUST STILL BE CAREFULLY OBSERVED—PROMOTION OF SATISFACTORY INDUSTRIAL RELATIONS THE BEST FORM OF INSURANCE.

The futility of ignoring the twists and turns of a criminal mind and of professing a belief that a change from one process to another can prevent the pilfering of gold in mill or cyanide plant is well illustrated in a recent report from Canada, by which it is learned that several men in the employ of a prominent gold mining company are implicated in a robbery of precipitate that may have extended over a period of two years. The conspirators are said to have covered their tracks by diluting, before assay, the samples of cyanide solution in such a manner that the reported yield of gold tallied with the theoretical balance shown to be deposited during precipitation by zinc. The diminished returns from the plant, it is reported, were thought by company officials to be due to a lowering in the grade of ore sent from the mine.

Checking Recovery against Extraction.

If the accounts be correct, the occurrence should provide much food for thought. In the first place, it seems absurd that, in these enlightened days, entire reliance should be placed on a method of checking that is obviously inadequate. To compare the amounts of gold in feed and tailing solutions, other than for the purpose of gauging precipitation efficiency, would be as enlightening as to compare the amount of gold that went into the crucible with the amount that came out of it. Obviously, the only satisfactory method of determining whether any appreciable amount of gold is being lost during treatment is to compare the assay of incoming ore with the assay of outgoing residue. However, comminution is necessary before efficient sampling of the ore is practicable, so that a correct estimate can be determined with accuracy or approximate accuracy only after preliminary fine crushing—i.e., after it has been reduced in stamp or ball mill. As in several other Canadian cyanidation plants in which up-to-date methods have been adopted, the ore at this particular mill is crushed in a cyanide solution that already contains gold, thus making the cheap and efficient sampling of "heads" impracticable. This doubtless constituted the reason why reliance was placed on the assays of solution samples as an indication of probable yield and as a check against loss—a system of control that proved to be valueless. An inability to provide convincing and reliable evidence as to the gross amount of gold in the ore received at the plant is one of the reasons for the frequent conflict of opinion between mill and mine superintendents; it prevents an intelligent anticipation of output; it favours slovenly accountancy and masks thievery. For several years it has been maintained in some quarters that the abolition of the amalgamation of an ore containing free gold and the adoption of milling in cyanide was justified, and that metallurgic reasoning was of small account, because of the danger of theft of amalgam when plates were used. The recent occurrence in Canada, which possibly may be indicative of a general condition rather than constituting an isolated instance, affords convincing evidence that such reasoning is illogical. Events have also shown that the streak of yellow gold on a concentrating table is even more attractive to pilferers than is the amalgam on a plate. If the desire to steal is in the minds of any employees having access to the mill, no change of process will prevent pilfering. It is, of course, obvious that precautions can and should be taken to minimise temptation among those employees who, for reasons that need not be elaborated, are likely to develop criminal tendencies if given half an opportunity. But if the systematic stealing of amalgam from the plates be considered by a superintendent as a logical result of the adoption of the amalgamation process, one can easily anticipate the attitude that will be taken by his employees when they realise the reasons for the substitution of milling in cyanide

Solution of the Problem.

Assuming zealous, intelligent, and honest supervision, the problem of gold stealing must be considered from the economic and not from the metallurgic standpoint. To discard a simple and proved auxiliary to cyanidation for no other reason than because of the danger of theft is tantamount to an admission of managerial incompetence. If such a viewpoint were general it would compel the shutting down of many of the largest gold mines in the world, and the dissolution of hundreds, if not thousands, of small companies and partnerships, which, in the aggregate, contribute largely to the wealth of nations.

How, then, can the problem be solved? After seeing that temptation, especially as it affects those in subordinate and labouring positions, is minimised, the first essential is to adopt a trustworthy method of checking plant input against monthly yield; when the ore is milled in cyanide solution containing gold, an adequate sampling plant appears essential. The knowledge that such a check can be made will deter many from considering the opportunities for thieving; careless or illogical metallurgic accountancy is the primary cause of many lapses from the straight and narrow path.

Precautions Against Theft.

Ore pulp containing free gold should be conveyed from one part of the plant to another in pipes or closed launders; plates are preferably housed in a separate room or building and away from milling equipment. Sections of the plant in which material of high grade is being deposited or collected or treated should be brightly illuminated at night and provision made against accidental darkness. If practicable, plate and precipitation rooms should be enclosed with coarse wire screening, not with opaque walls. Precautions to prevent the theft of amalgam or precipitate should include the covering with locked screens, between dressings, of plates and zinc boxes.

In a gold-treatment plant the first step is to see that the undesirable citizen or foreigner be kept away from the recovery department of the process and not allowed to touch amalgam or precipitate or approach near where it is being handled. Too much manual labour is necessary in many gold refineries. The dressing of plates and zinc boxes should be performed only by employees who have attained a reputation for honesty. Refining and melting operations should be simplified by the utilisation of adequate mechanical appliances. The pumping and collection of zinc-dust precipitate in a press is preferable to the handling of zinc shavings in a box; the mechanisation of the steps between precipitate collection and melting should be considered in detail by those who design such plants, especially when of medium size; the use of tilting furnaces and other refinements used in the last stages of the recovery process is essential to economical operation and to the avoidance of reliance on hand labour, which is usually supplied by that type of worker whose occasional presence in the refinery is a menace. The chaos and disorganisation that often accompany the monthly or semi-monthly clean-up in a zinc-shaving precipitation plant—the excessive bucketing of solution and water, the handling and rehandling of slime—are usually the result of faulty design and inexperienced planning.

Finally, and assuming that the opportunity for thievery is limited to a comparatively small number of men, is it not reasonable to assume that their special responsibility and exposure to temptation connote and demand special consideration on the part of their employers? Those who are trusted to handle precipitate or amalgam should be recognised as the ones whose feet are on the ladder of advance [illegible]. If they cannot be trusted they should be discharged. If it is realised that they can be trusted, they should be treated liberally, if not generously.

Value of Mutual Respect.

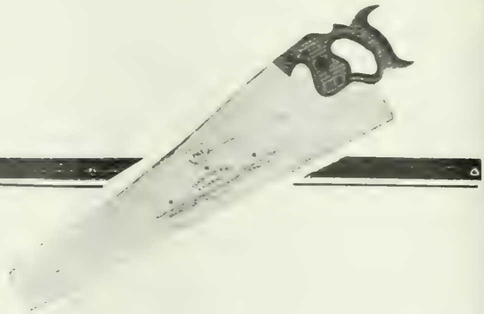
Often a young college graduate of good connections is chosen to take part in important phases of the final operations. His pay is frequently inadequate. In fact, a labourer with the backing of his union can often earn considerably more than can the helper in a mill and cyanide plant or refinery, who must possess, or be of the type able to acquire, an intimate technical knowledge of operations.

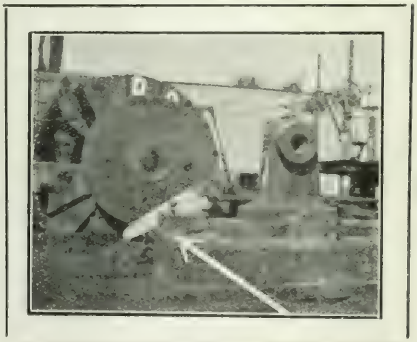
A teller in a bank may be poorly paid, but cheating cannot be carried on indefinitely under conditions in which the accurate accounting of receipts and disbursements is possible. The assistant who has the handling of gold amalgam or precipitate can filch the metal in small amounts; and too often he dulls his conscience by the conviction that his employer owes him what he is taking. This is the great problem that must be faced and solved by many superintendents. The only real remedy can be found in satisfactory industrial relations, by which the employee will be made to realise that he is fairly treated and that he is being paid for his honesty as well as for his service. The idea of providing compensation for integrity under such circumstances may be repellent to many, but sincerity is an asset that should come high in the list of assessable qualifications.

When mutually fair industrial relations are established, one may anticipate that grand larceny and petty thievery by millmen and helpers will be reduced to insignificant proportions. Dishonesty and insincerity thrive in an atmosphere of mistrust, suspicion, and surveillance; but they cannot persist for long without detection when a real attempt is made to see that no cause exists to justify a discontent that may warp the minds of those who are expected to remain loyal and honest.—By A. W. Allen, in the "Mining and Engineering Journal Press."

Rhodesian Mining Outlook.

Mr. J. G. McDonald, O.B.E., general manager for Rhodesia of the Consolidated Goldfields of South Africa, who is on his way to England, has given a Cape Press representative some interesting information in regard to the general situation in Rhodesia in the course of an interview. Asked, first of all, in regard to the recent mining activity in that territory, Mr. McDonald replied: "There is more prospecting going on in Rhodesia to-day than has been the case since 1910. Several promising small mines have been discovered of late, some of which may develop into big properties, but it means considerable prospecting at depth before one can say whether any big mines have been discovered or not." "There was a Press report recently, Mr. McDonald, to the effect that your company had taken over what promises to be a big mine in the Gwanda district?" "Yes, that is so, and it certainly is a very promising prospect with very considerable possibilities, and we are starting up an immediate campaign of development. It is called the Legion Mines. A good deal of work has been carried out on it by the owner in the last couple of years. Generally speaking, I may say that the outlook from the mining point of view is certainly more encouraging than it has been for quite a number of years, and I hope that as the result of the increase in prospecting which has taken place in the course of the next year or two we shall see a considerable improvement in the outlook of the mining industry, which, owing to some of the older mines beginning to get shaky, needed some encouragement."





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The Sale of Ex-Enemy Shares.

DETAILS OF SHARES SOLD AND PRICES REALISED—POINTS FROM THE CUSTODIAN'S REPORT.

Attached to the latest report of the Custodian of Enemy Property is the following list of shares sold and prices received :—

Sale of Enemy National Shares.

Mining shares sold prior to 1st April, 1922	£1,[illegible] 9
Commercial and miscellaneous shares sold prior to 1st April, 1922	286,1[illegible] 6
Mining shares sold subsequent to 1st April, 1922, and up to 31st December, 1922	1,465,653 3 1
Total shares sold	£6,105,035 19 4

Enemy National Shares sold prior to 1st April, 1922.

Name of Mining Company in which Shares held.	No. of Shares Sold.	Price per share.	Total Amount Realised.
A. Goerz & Co., Ltd. (New Union Corporation, Ltd.)	347,802	13 0	£226,071 6 0
G. & S. Syndicate, Ltd	600	20 0	600 0 0
Rand Selection Corporation, Ltd.	121,198	24 0	145,402 0 0
New Era Consolidated, Ltd	59,992	8 9	26,246 8 9
Geduld Proprietary, Ltd.	250,142	40 0	500,284 0 0
Modderfontein Deep Levels, Ltd. (May Consolidated	68,622	45 0	154,620 15 0
Total			£1,053,224 9 9

Enemy National Shares sold subsequent to 1st April, 1922, and up to and includinfg 31st December, 1922.

Name of Mining Company in which Shares held	No. of Shares Sold.	Price per share	Total Amount Realised
Aurora West G.M. Co.	26,115	1 0	£1,305 15 0
African and European Investment Co.	13,039	7 6	4,889 12 6
Apex	39,666	5 0	9,916 10 0
Brakpan Mines	76,859	40 0	153,718 0 0
Bantjes Cons.	75,114	5 0	18,778 10 0
Cons. Langlaagte	11,850	5 0	2,962 10 0
City Deep	66,744	32 6	108,459 0 0
Crown Mines	33,801	31 0	52,391 11 0
Crown Mines Deb.	£13,550	1910 0%	12,940 5 0
Cons. Main Reef	33,782	7 3	12,245 19 6
Cinderella Cons.	100,103	1 0	5,005 3 0
Cons. Co. Bultfontein Mines, Ltd.	33,004	17 0	28,053 8 0
Coronation Syndicate	27,186	3 0	4,077 18 0
De Beers Preferred	7,624	185 0	70,522 0 0
De Beers Deferred	9,375	185 0	86,718 15 0
De Beers Debentures	£8,350	1400 0%	5,845 0 0
Durban Rood. Deep, Ltd.	15,766	2 0	1,576 12 0
E.R.P. Mines, Ltd.	139,065	1 0	6,953 5 0
E.R.P. Mines, Ltd. Deb.	£69,567	1600/0%	55,653 12 0
Ferreira Deep	15,489	4/3	3,291 8 3
Geduld Prop. Mines, Ltd.	73,000	50/0	182,500 0 0
Govt. Gold Mining Areas	14,835	76/6	56,743 17 6
Geldenhuis Deep	18,511	3 0	2,776 13 0
Glynns Lydenburg	31,901	9 0	14,355 9 0
General Mining and Fin. Corp., Ltd.	835,371	2 0	83,537 2 0
Griqualand West D.M. Co. Du Toits Pan Mine, Ltd.	3,956	80/0	15,824 0 0
Johannesburg Cons. Invest. Co.	179,517	20 0	179,517 0 0
Johannesburg Estate Co.	19,910	3 0	2,986 10 0
Knight Central	57,319	3/0	8,597 17 0
Klerksdorp Exploration Co.	32,101	1 0	1,605 1 0
Kolmanskop Diamonds, Ltd.	91,446	19 0	86,873 14 0
National Bank of S.A., Ltd.	445	210 0	4,672 10 0
Langlaagte Est. G.M. Co.	45,273	10/0	22,636 10 0
Modderfontein Deep Levels	52,105	40 0	104,210 0 0
Modder B. G.M. Co., Ltd.	229,936	27 0	310,413 12 0
Modder East G.M. Co.	32,542	5 0	8,135 10 0
May Consolidated, Ltd.	32,014	0/8	1,067 2 8
Meyer and Charlton	42,865	57 6	123,236 17 6
New Primrose G.M. Co.	26,759	2 0	2,675 18 0
New State Areas	1,637	22 6	1,841 12 6
New Modderfontein	501,206	66 3	1,660,244 17 6
Nourse Mines, Ltd.	42,870	7 6	16,076 5 0
New Goch G.M. Co.	134,889	0 9	5,058 6 9
New Steyn Est. G.M. Co.	72,933	2 6	9,116 12 6
New Era Cons., Ltd	26,461	5 6	7,276 15 6
Nigel G.M. Co.	21,585	4 0	4,317 0 0
New Kleinfontein	105,343	2 3	11,851 1 9
New Jagersfontein	5,751	35 0	10,064 5 0
Premier Diamonds, Pref	14,384	97 6	70,122 0 0
Premier Diamonds, Def.	14,076	55 4	38,943 12 0
Potchefstroom Exploration	66,495	1 0	£3,324 15 0
Princess Estate	98,135	1 0	4,906 15 0
Randfontein Central	37,566	5 0	9,391 10 0
Randfontein Estates	101,460	13 0	65,949 0 0
Randfontein Estates, Deb.	24,500	1700 0%	20,825 0 0
Rand Mines	74,712	39 0	145,688 8 0
Robinson G.M. Co., Ltd.	6,488	3 6	1,135 8 0
Rand Collieries	185,065	0 3	2,313 6 3
Roodepoort United M R	58,791	0/3	734 17 9
Rose Deep, Ltd.	36,430	9 9	17,759 12 6
Robinson Deep	6,054½	10/0	3,027 5 0
Rand Selection Corporation	6,066	38/6	11,677 1 0
Roberts Victor Diamonds	8,937	5 0	2,234 5 0
Sacke Est. and Mining Co.	75,819	3/0	11,374 8 0
S.A. Townships M.F. Co.	24,310	7/0	8,508 10 0
South Village Deep, Ltd.	31,375	0 9	1,176 11 3
Simmer and Jack, Ltd.	19,915	2 0	1,991 10 0
Sub Nigel, Ltd.	4,372	10 0	2,186 0 0
Springs Mines, Ltd	72,350	39 0	141,082 10 0
Transvaal and Delagoa Bay Investment Co.	13,571	45 6	30,874 0 6
Transvaal G.M. Estates	31,907	7 6	11,965 2 6
Transvaal Cons. Land Co.	40,876	12/6	25,547 10 0
Tudor G.M. Co., Ltd.	127,121	0/2	1,059 6 10
Union Corporation	13,827	16 0	11,061 12 0
Van Ryn Deep G.M. Co., Ltd.	25,825	56/6	72,955 12 6
Village Deep	35,529	5 0	8,882 5 0
Van Dijk Prop. Mines, Ltd	256,558	0/3	3,206 19 6
Vereeniging Estates, Ltd.	24,053	14 0	16,837 2 0
Witwatersrand G.M Co., Ltd.	39,242	8 0	15,696 16 0
Witbank Colliery	5,453	37 0	10,088 1 0
Wolhuter G.M. Co.	92,021	1/6	6,901 11 6
West Rand Cons. Mines, Ltd.	680,720	1/0	34,035 0 0
West Rand Trust, Ltd.	21,403	1 0	1,070 3 0
Welgedacht Exploration	43,832	9 0	19,724 8 0
West Springs, Ltd.	6,590	6 0	1,977 0 0
Western Rand Estates, Ltd.	20,031	2/9	2,754 5 3
Withok Prop. Co., Ltd.	4,761	6 9	1,606 16 9
Witwatersrand Deep, Ltd.	51,810	9 6	24,609 15 0
Total (including small items not specified in abridgement) ...			£1,465,653 3 1

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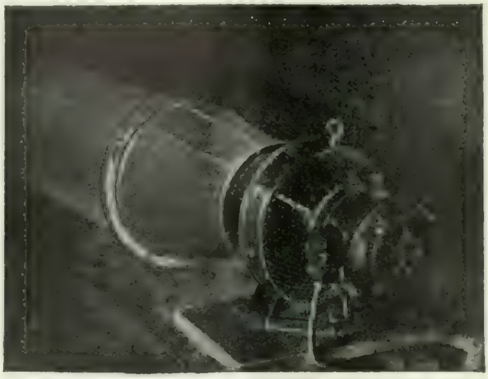

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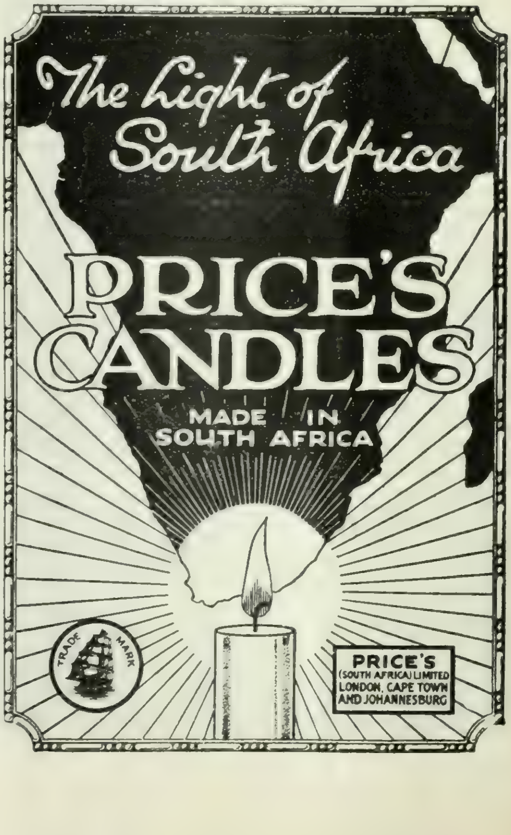
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TOPICS OF THE WEEK.

Trade Unions for Natives.

During the strike which took place on the gold mines of the Witwatersrand a little over a year ago, the plea for "a white South Africa" was frequently voiced by trade union leaders and Labour politicians in the Transvaal. It is not a little surprising, therefore, to note, from the remarks of a prominent Rand trade unionist, that trade unions on the Reef are now contemplating "organising" the natives and admitting them to membership of white unions. In his evidence before the Select Committee on the Industrial Conciliation Bill, the report of which has recently been published, Mr. George Brown, one of the representatives of the Associated Trade Unions, took exception to the exclusion of natives from the definition of "employee" in the draft Bill, and added: "Here the natives are getting the work to-day and it is becoming fairly prominent, and it is going to compel us to organise the natives. There are natives in trades in the Cape, and they are compelled to organise there, and if that goes on in the Transvaal we will be compelled to organise these men and take them into our unions." Farmers in the Union will no doubt view with some misgiving this indication that the political allies of the Nationalist Party are considering the question of promoting amongst their black brethren trade union organisation with its attendant principles, such, for instance, as "one man one job," an eight hour day and time-and-a-half for overtime—a movement which, if it were extended under white guidance to natives in the rural areas, would cause considerable embarrassment to the farmer with a crop to reap or a flock to shear.

Rand Wages Highest in South Africa.

It has often been contended that the skilled artisan, the miner, the production worker and, in fact, organised labour generally on the Rand, is in receipt of a higher wage than the average wage-earning capacity of the Union. Despite all that has been said for political reasons against the very necessary reduction in working expenses which was effected by the mining industry after the calamitous strike of last year, it is indisputable that the average remuneration earned by employees on the Rand are considerably higher than the wages obtainable in the smaller towns and country districts of South Africa. The best proof of this is to be found in the fact that an important conference on the "poor white problem" was opened at Bloemfontein a day or two ago. It was convened by the Dutch Reformed Church authorities in the Free State acting in conjunction with the "Armsorg" or "Care of the Poor" committees of the four provinces. The Rev. P. S. van Heerden, moderator of the Dutch Reformed Church, presided, and there were about 150 delegates from every part of the Union. Important addresses were given by General Hertzog, leader of the Nationalist Party, and by Dr. D. F. Malan, the leader of the Cape Nationalists. The purpose of the speeches and resolutions referred to the depopulation of the rural areas, and to ways and means of reducing the influx into the towns. These questions were discussed at great length. General Hertzog, in the course of an address, stated: "If the conditions were allowed to continue, and the evils to grow, then they would only gather the crops reaped by other countries which had let the evils grow unchecked, namely Socialism, Bolshevism, Anarchy, Communism and the like."

Dr. Malan quoted some interesting statistics showing that between 1911 and 1921 the urban population of the Union had grown 28 per cent. as against 9 per cent. in the rural population. In this connection, too, it is of interest to point out that in the latest Government subsidy scheme for the unemployed of Johannesburg the granting of relief is conditional on the closest investigation of the origin of the men who are to receive this relief subsidy, and as far as possible this relief will only be granted to bona fide Rand residents. One reads, too, in the daily Press of a family trekking 1,000 miles from George, in the Cape Province, to the Rand in search of work. In this pilgrimage the mother carried a year-old baby the whole way, and two other children walked with the father and mother 1,000 miles in 11 months through rains and forests and rivers in an attempt to reach the Rand.

This influx of people from the outlying districts to the Witwatersrand is simply the result of the fact that wages on the Witwatersrand are higher than anywhere else in the country, and the uneven distribution of money resulting from this is causing the depopulation of the country districts, and is filling Johannesburg and the reef towns with unemployed. The mines or any other employers cannot cope with this influx. They have only a certain number of jobs to be filled, and it is obviously economically absurd to create artificial jobs. The mines, too, at present, are suffering from a shortage of native labour, and if they could get more boys there would be a certain number more jobs offering for white men.

The excessive taxation of the mining industry is another direct cause of unemployment. Had taxation not been carried to excess in the Transvaal and were adequate supplies of coloured labour always available, it is probable that the Geduld East property would have been now undergoing the preliminaries of exploitation, and this in itself would have meant employment for a considerable number of white men.

The primary and essential fact in connection with the problem of unemployment is, however, simply this: that the average wages paid on the Witwatersrand are so much in excess of those which are obtainable in other parts of the country that large numbers of the rural population are constantly trekking into the Witwatersrand area in search of highly paid jobs.

Practical Economics.

What used to be called the "dismal science" of economics has of recent years become invested with great human interest, because of its practical bearing on burning questions of the day. Thus Mr. W. R. Ingalls, the well-known American engineer, has been explaining to his brother engineers the significance of some of the facts and figures published by the Bureau of Economic Research, an acknowledged authority in the States. "As one of the fruits of the work of that body," we may assume," says Mr. Ingalls, "that we now have at least an approximate idea respecting the national wealth and a positive idea regarding the national income. These are naturally the fundamental things in any consideration of our national affairs. They are of the nature of a corporation balance sheet and income statement. The possession of knowledge of these subjects has already been of inestimable benefit, and in two main ways. In the first place, the possession of knowledge of the amount of the national income has given us a yard-stick with which to make many comparisons that previously were impossible. Now that we are able to make such comparisons we are getting many salutary shocks. For example, we are shocked to discover that our present cost of government is somewhere between one-eighth and one-sixth of our total income, and this discovery is focusing public attention upon the importance of economy in public expenditures. But it is our present knowledge of the amount of the national income and the division thereof between the wage earners on the one hand and property and management on the other hand that has been of the greatest importance. It is true that we previously possessed knowledge on this subject that was convincing to the engineering mind. Mallock had shown us that in the economic history of Great Britain the benefits of invention and managerial organisation had mainly accrued to the masses of the people. Bowley had shown that in Great Britain the major part of the current income accrued to the wage-earners. I had shown the same thing with respect to the United States in my study for 1916, proving conclusively to any scientific mind that about 75 per cent. of the American income, other than agriculture, went to the wage-earners. Here was another case of economic prophets to whom no special attention was paid. Such as might have been given to us was passed away with the explanation that we were the partisan exponents of capitalism. The prevalent idea expressed among professional representatives of labour was that labour received a mere dole out of what it produced, 25 or 30 per cent., and that it ought to get a fairer share. Pink socialists, members of the Fabian Society, and philanthropologists generally supported this contention. Now let us think of the supreme importance of this establishment. It has felled the whole Marxian philosophy. It has confirmed in the main the economic doctrine of the residual claimancy of labour as expounded by Jevons and Walker. It has dispelled all fallacies about a wages fund and has confirmed the theory that labour gets what it produces, and by no possibility can get any more than it produces. It has exploded the recent contention for a living wage, so called, and the arbitrary guarantee to people of a desired scale of living. On this subject, we have literally knocked the labour leaders off the boards. One of the leading economic exponents of the labour organisations in a recent public conversation practically admitted this, receding to the ground that the principle of the guaranteed living wage should be upheld only with respect to a part of the workers, which he explained would not cost very much and therefore would be practicable."

These conclusions, have, of course, a very direct interest for us in South Africa, and our economists, we are glad to note, are carefully watching and applying these lessons to our own local problems, which differ in degree but not in principle, from those of the United States.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

* * *

An F.B.I. Report.

An interesting report on Inter-Imperial trade has been issued by the Federation of British Industries. The Committee, however, deprecates the idea that British economic difficulties can be entirely solved by rapid development of trade with the Dominions. It is pointed out that from 1913 to 1922 the ratio of Imperial to foreign trade remains practically constant, and that many British manufactures, being intended for a white highly civilised population, cannot be expected to meet with so much trade among the relatively small white population in the Empire as in European markets. While welcoming the Imperial Conference, the Federation urge the even greater importance of some permanent organisation which may play a larger part in the development of Inter-Imperial trade and general relations on matters of principle. They suggest that a small permanent secretariat should be appointed for this purpose.

The Committee agree that the natural desire of many parts of the Empire to develop their manufactures must be admitted, and they are prepared to recommend the provision of British capital and experience to this end. Regarding markets for the increase of Empire production, the Federation thinks that full development of Inter-Imperial trade is dependent, to a large extent, on the restoration of normal conditions in other parts of the world, which in the past have been large purchasers from the Dominions. This raises the question of Imperial preference, which the Federation regards as "a matter whereon there is so deep a difference of opinion in the industrial world that the Federation cannot, as representing all industries in the country, put forward a unanimous opinion." Arrangements are being made for each industry to put forward its own view.

* * *

Ex-Enemy Property.

The transactions of the Custodian of Enemy Property from June 22, 1916, to December 31, 1922, are summarised as follows in the Custodian's report:—Debts paid to British subjects, £302,481; Compensation for enemy action (Galway Castle claims, etc.), £42,898. Liabilities of enemy Governments discharged—Due to Union Nationals, £78,202; Due to Union Government, £9,372. Interest on estates released, £46,993; Interest on certificates of credit issued, £118,585; Interest on enemy Nationals' capital, £93; Capitalised interest account, £234,568; Sale of ex-enemy property, £8,363; Sale of ex-enemy shares, £442,995; Administrative charges, £61,966; Investments, £12,155,584; Balance on December 3, 1922, £80,774. The credit account is as follows:—Net amounts held on account of enemy persons—Mine dividends and shares sold, £7,940,666; Bearer shares, dividends thereon, etc., £39,056; Bearer shares, capital account, £106,269; Miscellaneous, £477,789; Certificates of credit issued, £2,110,161. Custodian's account, £2,225,166. Profit on sale of Union 5 p.c. stock, £2,016; Public Trustee, London, £400,000; Public Tustee, London—sale of shares, £194,846; South-West Protectorate, suspense account, £89,004.

The Week in the Sharemarket.

IRREGULAR—TONE EXPECTANT—DIAMONDS BETTER.

Throughout the week the market has been irregular. From time to time fair business has been done, but the periods of activity have been limited. There have been very few features. Corner House stocks have been notable for the firmness of Modder B. and Modders also were in demand. Nourse Mines have been steady and were picked up at the least decline. Crown Mines fluctuated but latterly were bought. Main Reefs and Modder Easts have had modest dealings. Barnato stocks again featured State Mines, which have attained a record price on further reports about the splitting of the shares. New States revealed no new feature. Randfonteins have been steady. There has been some heavy selling, but always enough buyers about to support the price. New Consolidated Goldfields stocks displayed some inquiry for Robinson Deep B shares. People are now beginning to realise the potentiality of this share. The A shares were also inquired for. Simmers were dull and lost the penny advance of last week. Union Corporation stocks have been steady. Modder Deeps improved on investment buying. Gedulds are taken when offering. General Mining stocks present no new feature. There has been some interesting correspondence in the Press regarding Cinderella, which it is hoped to open up with the assistance of the Government. Relief from this source is improbable, as it is thought that if the mine is worth opening the House itself should take the initiative. The Anglo American stocks were steady, Springs having considerable business and West Springs maintaining their price. Brakpans have been bought. Anglos fluctuated to a slight degree in sympathy with Consolidated Diamonds. Diamond shares have shown some activity. Crown Diamonds on support rose a few pence, but fell back again. It seems probable that there will be more doing in this share shortly. Consolidated Diamonds were a steady market, at one time being bought for London. West Ends were neglected and rather declined in price. Industrials displayed no features of interest, Alkali, after a brief spurt, receded again to their old level. Cements were a little firmer, and Cape Cements had some inquiry, without much business. A new Platinum Syndicate has been dealt in, the 5s. shares changing hands at 20s. The property is in the Northern Transvaal and it is said the find is a rich one. There have been no real dealings in Rhodesians. London and Rhodesians are lower in sympathy with Cam and Motors. The new plant about to be erected at the Cam property should assist profits, and renewed activity may be seen in these shares later on. Investment stocks have been very idle. There were a few sales of Reserve Banks, and National Banks are being taken up at £6 when offered. Loans have been difficult to deal in owing to scarcity of stock. The tone of the market is expectant. It is hoped that the bulk of the dividends to be paid out early in August will come back for investment. The labour shortage, though said to be acute on some mines, is being provided for, and it is probable that general conditions for August will be better than for the present month. At the same time the July profits are expected to be satisfactory.

	Fri. 13th.	Sat. 14th.	Mon. 16th.	Tues. 17th.	Wed. 18th.	Thurs. 19th.
Anglo Am. Corp. . .	22 6	22 3*	22 6	22 6*	22 6*	22 6+
Apex Mines	5 0*	5 3*		5 6*		
Aurora Wests . . .	—	5 9*				
Brakpan Mines . . .	—	56 6	56 3	55 6*	55 6*	55 6*
Bushveld Tins . .	—	0 3*	0 3*	0 3*	0 3*	
Cinderella Cons. .	—				[illegible]	
City and Subs. . . .		2 6*	2 6*	2 6*		
City Deeps	50 6	50 3*	50 0*	49 [illegible]	49 0*	
Clydesdale Colls. . .	—	17 0+	17 0+	17 6*	17 [illegible]	17 [illegible]
Con. Diamonds . . .	20 3	20 1*	20 9	20 7	[illegible]	20 6
Con. Main Reefs . .	9 0+	8 3*	8 6*	8 3*	8 [illegible]	8 6*
Coronation Freeholds	0 5*		0 5*	0 4*	[illegible]	
Do. Syndicates . .		5 0+	4 6*	4 [illegible]	4 [illegible]	4 4*
Crown Diamonds	6 1*	6 6*	6 11	7 2	7 0	6 7*
Crown Mines . .	18 6	18 3		17 0*	16 6	16 9*
Daggafontein Mines	2 8*	2 7*	2 7	2 6	2 6+	2 5+
Durban Road Deep	15 0*	15 0	15 [illegible]	15 0*	15 0*	15 0*
East Rand Coals . .	1 0	1 1	1 0*	1 0	1 0*	1 0*
East Rand Deeps . .	0 7*	0 6	0 6*		0 7*	0 7*
East Rand Minings	10 0+			10 0+		
East Rand Props .	4 6*		4 10			5 0+
Eastern Golds . .	0 4*	0 3*	0 5*	0 4*	0 4*	0 4*
Frank Smith Dmds	3 0	2 10*	2 10*	3 0*	3 0*	3 0*
Geduld Props. . . .	59 6*	56 3*	56 0+	56 0*	58 6	56 0
Geldenhuis Deeps .			4 0*	4 3*		
Glynn's Lydenburgs	14 9*	15 0	15 0+	14 3*	14 0*	15 0+
Govt. Areas	110 0*	111 0	111 0	110 0*	112 0	112 0
Hume Pipes	7 9	8 0+	7 9	7 9*	7 9*	7 9
Lace Props. . . .	7 6	7 6*	7 6*	7 6*	7 6*	7 9*
Langlaagte Est	21 0*	20 6*	21 0	20 6*	20 9	20 6*
Leeuwpoort Tins . .	4 0*	4 3*		4 0*	4 3*	
Lydenburg Farms . .	2 6*	2 6*	2 6*	2 6*	2 6*	
Meyer and Charltons	62 6*		62 6			62 6*
Middelvlei Estates		1 0*	1 0*			
Modder B.'s	23 3	22 6*	22 9*	22 6	22 6*	22 6*
Modder Deeps	40 3	40 3*	40 0*	40 0	39 6*	39 9
Modder Easts .	5 10*	5 11*	5 11	5 10	5 6	5 8
Natal Navig. Colls		27 0*	27 0*	27 0*	27 0*	26 3*
National Banks . . .	120 0*	120 0*	120 0*	120 0*	120 0*	120 0*
New Eland Dmds. .		40 0			38 6*	38 0*
New Era Cons. .	6 8	6 8*	6 6*	6 8*	6 8*	6 6*
New Geduld Deeps	0 6*	0 6*	0 6*	0 6*	0 6*	0 6*
New Kleinfonteins .	5 0	5 0*	5 0*	5 3+		
New Modders	77 0	77 0*	77 0*	76 3*	77 0	76 6*
New Primrose . . .	3 0*	3 6+		3 0*	3 6+	3 0*
New State Areas .	30 9*	31 0*	31 6+	30 6*	31 0	30 0*
Nourse Mines	14 3	14 0*		13 3*	13 9*	13 9*
Pretoria Cements . .	36 6*	37 0	37 0*	37 3	36 9*	36 6*
Rand Collieries . .	1 0*		1 0		1 0*	
Rand Nucleus	1 1*	1 0*	1 0*	1 0*	1 0*	1 0*
Randfontein Centrals.	14 0+			11 6*		13 0+
Do. Estates . .	19 6	19 3	19 3	18 9	18 6*	18 9
Rouxville Dmds. . .	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
Roberts Victors .		7 0	6 0*	5 0*	5 3*	6 3*
Robinson Deep "A"		31 0*	31 6*	31 6*	31 9	31 6*
Robinson Deep "B"	12 10	12 6*	12 10	12 6*	12 6*	12 6*
Rooibergs . . .	3 0*	3 0*		3 3+	3 3+	2 9*
Ryan Nigels		4 0+			4 0+	4 0+
Simmer and Jacks .	2 11	3 0*	3 1	3 0	2 10*	2 10*
S.A. Breweries . . .	30 0*	30 0*	30 0*	30 0*	30 0	28 6
S.A. Lands	3 0*	3 0*	3 1	3 0*	3 1*	3 1
S.A. Reserve Banks .	£134+	£132½*	£132 *	£132½*	£132½*	£132½
Springs Mines . . .	44 0	44 0	44 3*	44 0*	43 9*	44 6
Sum-Nigels	9 6		9 4*	9 6	9 7*	9 6*
S.A. Alkali	12 0	11 9	11 6*	11 3	10 6	10 3*
S.A. Townships .	10 0*	10 0	10 0*	10 3*	10 3*	10 3*
Transvaal Lands . .				16 6+		
Transvaal G.M. Est	8 0*	8 6+		8 0*	8 6	8 3*
Transvaal Silvers .	13 9	14 0		13 6*	13 0*	
Tudors				0 2*		
Union 5 per cent. .	£102*	£101 *	£101 *	£101 *	£101	£101*
Van Dyks . . .	0 10*	1 0*	0 9*	0 9*	0 9	0 9*
Van Ryn Deeps	62 6*	62 6*	62 3*	63 0	62 3	62 0*
Van Ryn Estates						11 3*
Village Deeps . . .		10 9*				12 0+
West Springs	19 9	19 7*	19 9	19 0	19 6	19 6
West Rand Cons			5 0*	5 0+	4 9+	
Western Rand Est	2 0*	2 0	2 0*	2 0*	2 0*	
Witbank Collieries	31 0*	31 0*	32 0	31 0*	31 0*	31 0*
Witwatersrands .	12 9*	12 9*		12 6*	12 6*	12 6*
Wit. Deeps . . .	13 6*	13 7*	14 0*	13 9*	14 0	14 0
Zaaiplaats Tins . . .	4 1*	4 1*	4 3	4 3	4 3*	4 1*

* Buyers. + Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

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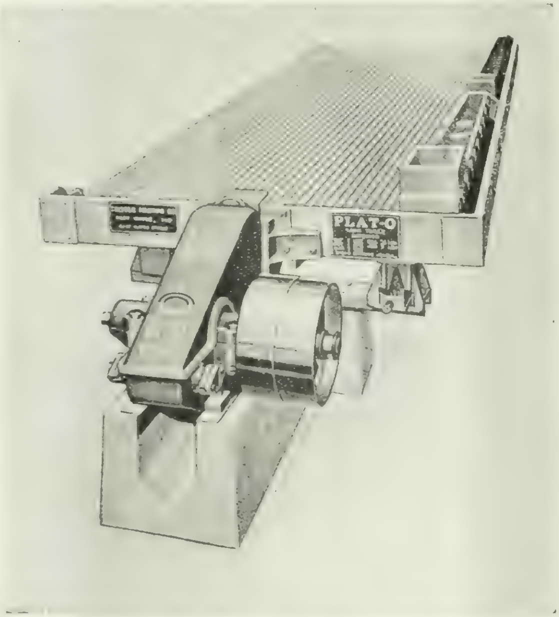

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The Week in British Engineering.—II.

(From Our Engineering Correspondent in London.)

The Size of Water-Tube Boilers.

There has been an astonishing increase during the past few years in the size of water-tube boilers, until to-day we have got to the stage that there is now being constructed in America, for the Cleveland Electricity Station, two "Ladd" boilers which will have a heating surface of 30,500 square feet each, corresponding to a normal evaporation of something like 325,000 lb. per hour, an almost incredible figure; whilst there is now in successful operation at the Detroit Marysville Station water-tube boilers of 29,880 square feet heating surface each, with a normal evaporation of something like 300,000 lb. per hour. As the famous River Rouge plant at Detroit, belonging to the Ford Motor Company, have had boilers of 26,500 square feet heating surface—which were until recently the largest in the world—working with great success for several years past, and this particular station is in fact being doubled in size at the present time. It can be taken, therefore, that boilers of 30,000 square feet heating surface can be constructed and will work successfully, and there is even talk in the United States at the present time of constructing boilers of 40,000 square feet.

On account of this it is now becoming a prevalent idea among super-power station engineers to construct future stations on the principle of one boiler and one turbine, making the whole an entirely self-contained unit of boiler, mechanical stokers of pulverised fuel, superheaters, air heaters, economisers, steam pipe connections and turbine, which is of course started up and shut down together. As is of course well known, the present modern power station method is to have one main turbine with a row of boilers, usually 4-6, placed at right angles to the turbine room, and each of these rows of boilers has its own separate coal and ash-handling equipment, forming a unit of one turbine and six boilers. There seems to be no insurmountable difficulty, therefore, in having the principle of one boiler and one turbine. Thus, for example, to take a turbine of 30,000 K.W., which is now being generally recognised as being the best size and preferable to large units, this would require at 28¼ in. vacuum certainly not more than 12 lb. steam per K.W. hour, including all the accessories, which would be a steam demand of 336,000 lb. per hour. This duty would be given quite easily by a 40,000 square feet heating surface boiler, and probably by a 35,000 square feet boiler, and there is no question that such an installation would result in a remarkable simplification of the plant and the pipe design, together with much easier operation. Also, with the perfection of the modern system of degassing the feed-water, there would be no need to fear corrosion troubles due to dissolved air, whilst the perfection of water screens, the large volume 3-zoned furnace, and the design of hollow firebricks air-cooled, such as we have already described in these notes in connection with "Lopulco" pulverised fuel, would mean that even working at 86 per cent. efficiency with pulverised fuel, the boiler installation would be practically as free from wear and tear as the turbine, and last for the same time. The normal steam pressure suggested for such an ideal combination would be 350 lb. gauge and 700° F. total superheat temperature, with the temperature of the feed water through the economiser of 250° F., producing 29.25 lb. steam per square foot of heating surface. As stated on previous occasions, it has been the experience of American power station engineers that the very large turbine up to 60,000 K.W. has not been the success it was anticipated, and 30,000 K.W. is to-day regarded as the ideal size.

Oxygen Recorders.

Automatic gas analysis continues to make progress, and we have to-day a complete range of such instruments for CO_2 only, oxygen only, combined CO_2 with CO and unburnt gases, combined CO_2 and oxygen, sulphur dioxide and chlorine, and the ordinary automatic Combustion Recorder for furnace work, which gives a continuous record at the rate of about 20 analyses per hour, is now in fact becoming obsolete in very up-to-date plant. Whilst it is of course admitted that the continuous record of the percentage of CO_2 in connection with, say, steam boilers and brewers' coppers is a valuable guide when used with discretion, it is being recognised that this is not in itself sufficient for the best results. What is really necessary is not only the percentage of CO_2, but also some indication either of CO and unburnt gases, or of the excess of oxygen.

There has already been described in these notes the new types of automatic gas analysing machines which analyse both the CO_2 and the CO and unburnt gases, giving a continuous record side by side of the two figures, so that the furnace may be controlled at the maximum efficiency of high CO_2 with absence of unburnt products.

A still more recent development in this field is that represented by instruments in which there is given a continuous record of CO_2 and of excess oxygen side by side. These machines work on the same general principles as the simple CO_2 Recorder, that is to say, by means of an automatic syphon. A sample of the flue gas is taken, filtered, measured out to an accurate amount like 100 cubic centimetres, and then this measured gas passed through a solution of caustic potash, which absorbs the CO_2. The residual gas then passes into a floating measuring bell, and the deficiency in the volume is the percentage of CO_2 as represented by the reduced travel of the bell, which actuates a pen mechanism over a chart. There is now added to this mechanism a further arrangement for subsequently absorbing the oxygen in the residual gas by means of phosphorus and measuring the further reduced volume a second time. The absorbing medium is a large number of small pieces of phosphorus, separated by glass beads and immersed in water. The charge of flue gas, after having been deprived of CO_2, is then passed into the phosphorus container, pressing down the surface of the water and uncovering the phosphorus, which immediately absorbs the oxygen. The water, as it is pressed down, rises in a delivery tube which works a float, and the deficiency in the rise of this water is proportional to the amount of oxygen absorbed, the second float working a pen on the chart on the same general principles as with the CO_2 Recorder only. In this way a record of the excess oxygen can be obtained at the rate of 20 records an hour, together with the time of each analysis, obviously a valuable adjunct to combustion control.

The Accurate Measurement of Large Volumes of Air.

There has now been perfected instruments for the accurate and continuous measurement of large volumes of air or other gases, which should be of considerable interest to the brewing industry. For example, it might be a practical proposition to have totally enclosed drying rooms with double type self-sealing doors, so as to keep a continuous record of the total volume of air passing, just as portions of a brewery are sometimes isolated so that all the air admitted can be passed through one small apparatus with the object of destroying "wild" yeasts. Perhaps also it will be the custom in the near future to "box in" the boiler house and measure all the air used, just as in an up-to-date plant to-day the fuel and the water evaporated is measured.

Naturally for work of this kind the ordinary gas meter type of apparatus is out of the question, because of the size, weight and cost, and anemometers usually depending on the principle of a revolving wheel or some such mechanism are not accurate and only have a limited application.

The essential principles of the modern measuring instruments for large gaseous volumes now being developed are somewhat the same as those of the town meter, depending there is an increase in velocity through the restricted area, which causes a slight difference in pressure at the neighbourhood of the disc as compared with the main body of the pipe. At [illegible], two small tubes are connected to this point, and the difference in pressure in the circuits is proportional to the amount of flow of the gas in the large pipe. By these methods of means of "Pitot" tube or "Venturi" disc can be made without difficulty any size for any [illegible] furnace plant, or even for the up-cast shaft of a whole colliery. The disc or tube is then connected by small pipes of any length to a delicate recording instrument which records the difference in pressure either on a chart or over a dial, and this difference is graduated in terms of the flow of the gas. In this way it is possible to obtain a most accurate measurement certainly to about 2 per cent of the volume of gas passing no matter how large this may be.

A New Non-Corrosive and Heat-Resisting Paint.

One of the most difficult problems of industry has been to devise a paint which will be resistant to rusting, all forms of acid corrosion, and which will at the same time withstand the action of heat. Thus, for example, in the case of steel chimneys, the problem is particularly difficult, since the temperature is often 500-600° F. at the base, under which conditions most paints shrivel up and rusting proceeds rapidly under the influence of the rain on the heated surface. At present special bitumastic paints are used for such conditions, but they are not entirely satisfactory.

There is now being developed, however, in Great Britain a remarkable new paint, which seems to consist essentially of very finely divided carbon and complex organic carbon compounds in a peculiar greasy and colloidal state, which is manufactured by the action of sulphuric acid on coal tar, the product being then subjected to special treatment. This paint, which is supplied in black only, is claimed to have the most remarkable properties, especially in withstanding heat. Thus it is stated to be absolutely unaffected by very high temperatures, even 800° F., as the carbon does not oxidise because of its peculiar physical condition, whilst it is also claimed to be completely resistant to all acids, even when comparatively strong, to alkalis, to obnoxious gases of every description, and to substances such as alcohol, benzole and petrol. If these claims are substantiated, it should be of invaluable assistance to practically every industry in the country.

upon the application of either the "Pitot" tube or the "Venturi" disc. As is well known, the "Pitot" tube consists essentially of two tubes in the passage of the gases, one bent at right angles away from the flow and the other bent at right angles facing the flow. This causes a difference in pressure in a small connecting pipe circuit, since there is an increase in the pipe facing the flow and a decrease in the pipe away from the flow, and this difference in pressure is proportional to the volume of gas passing in the large pipe.

The "Venturi" disc type consists essentially in placing in the large pipe or conduit a disc of smaller diameter than the pipe itself. Since the same volume of gas is passing,

Electric Haulage in Mines

A prize has been offered by Mr. Charles Markham, Chairman of the Staveley Coal and Iron Co., Ltd., for a safe and efficient type of electric storage battery locomotive for use underground in coal mines. Underground locomotive haulage has been greatly developed within recent years in America and on the Continent, but in Great Britain, owing partly no doubt to the unsuitability of the conditions, but also in a large measure to legislative restrictions, the system has not found favour with mining engineers. Under the Coal Mines Act the employment of petrol locomotives is prohibited in fiery mines, and General Regulation 136 also prohibits haulage by electric locomotives on the overhead trolley wire system in any mine in which coal is worked, though not in mines other than coal mines; but, in accordance with the same regulation, haulage by storage battery locomotives may be used in any mine, with the consent of the Board of Trade and subject to such conditions affecting safety as may be prescribed by them. The official Memorandum issued by the Mines Department gives, by way of illustration, typical special conditions for the guidance of those desiring to use battery locomotives. The pressure should not exceed 100 volts, non-inflammable material should be used in the construction as far as possible, there must be ample protection against sparking and no part of the structure should form part of the electric circuit. More information on the subject may be obtained from the standard specification drawn up by the United States Bureau of Mines, by whom such locomotives are now tested and approved. It is possible that the scope of the competition, which is open to inventors of any nationality, has been restricted to locomotives of the battery type to avoid any alteration in the existing regulations, but it is more probable that the trolley locomotive has been omitted from consideration because, although more economical in running and first cost, it is less well adapted to British conditions than the battery locomotive.

According to an elaborate memoir on "Coal Mine Haulage in Illinois" by Stoek, Fleming and Hoskin, recently issued by the University of Illinois, the first electric locomotive using current from a dynamo was built by Siemens and Halske in Germany, and shown at the Berlin Exhibition in 1879; in 1882 the first electric mine locomotive was installed in the Royal Coal Mines at Zaukerode, Saxony. In 1887 a motor-driven locomotive was put to work at a mine at Lykens, Pennsylvania, and was still in service. Such locomotives, however, did not become common in American mines until the early years of the present century. At first they were employed almost exclusively in main haulage, but their use was subsequently extended to "gathering" or subsidiary haulage. For this purpose it was necessary to devise a locomotive that could dispense with trolley extensions, and in response to this need the cable locomotive was designed. Briefly defined, this locomotive is one that can not only operate as a trolley locomotive, but can also travel on track not equipped with trolley wire by taking its power through a long flexible conductor or cable carried on a drum or roll mounted on the engine. The next development was the "crab" locomotive, in which a seperate cable and drum is employed for hauling tubs from the faces, thus avoiding the necessity for the locomotive itself to enter the room. Both in American and in European mines, the experience in regard to cost has been rather against the storage battery, but it should be remembered that the conditions of usage with respect to the different types of locomotives are not strictly comparable. It will be readily appreciated that the trolley locomotive in the United States, quite apart from safety considerations, operates in conditions that find no counterpart in this country. They are at their best in the slant, where a single journey delivers the coal at the tipple, and they require regular roads with plenty of headroom. Since their introduction they have gained steadily in size and capacity, until they approximate nearly to those used for haulage on the surface. It may even be said that the conditions found in British collieries militate also against the use of the storage battery. These locomotives are not suited to intensive traffic conditions, and, although they are adapted to sharp curves, they require straight and level roads. M. Deflize, of the Ougrée Co., writing in 1919 from an experience of many different systems in Belgium, concluded that locomotive haulage must to a large extent be restricted to the main roads. It is undeniable, however, that there is an opening for the storage-battery locomotive in British collieries, even if it does not promise to provide a complete solution of the pit pony question, which causes so much distress to so many well-intentioned people at the present time. It is entirely a question of economy.

INDUSTRIES SECTION.

The Truth about Torbanite.

EXHAUSTIVE REPORT BY GOVERNMENT MINES INSPECTOR—QUALIFIED ENDORSEMENT OF PROSPECTORS' ESTIMATES—IS ERECTION OF PLANTS JUSTIFIED?—MILLIONS OF TONS OF SHALE—OIL YIELD UP TO 98 GALLONS.

One of the big industries of the future in South Africa will unquestionably be the extraction of oil from the shales which are to be found in very large areas in the Union. The possibilities of this development have been discussed ever since the Government, ten years ago, engaged the services of Mr. E. H. Cunningham Craig to report on the petroleum prospects of the country. He found that the indications of flowing mineral oil existing in commercial quantities in the Union were not favourable, but that the prospects of establishing an oil-shale industry were good. But it was not until a year or two later that Mr. Cunningham Craig discovered that South Africa possessed enormous quantities of the substance known as torbanite.

"Torbanite," reported Mr. Cunningham Craig, "is not an oil shale, but of an entirely different nature. It yields up to as much as 130 gallons of oil per ton, as against the 25-42 gallons normally yielded by oil shale. The crude oil obtained from torbanite is greatly superior to that obtained from oil-shale, containing a much higher percentage of valuable refined products, being cheaper and easier to refine with less loss in refining."

Since Mr. Cunningham Craig's investigations there have been numerous experimental tests carried out by private enterprise, details of which have from time to time been published in *The S.A. Mining and Engineering Journal*. Recently Mr. Tudor G. Trevor, A.R.S.M., Inspector of Mines, Pretoria, has made a special study of the subject and has now completed a comprehensive survey of the possible sources of commercial oil in South Africa. This is published in the current number of *The South African Journal of Industries*, which is issued by the Industries Division of the Department of Mines and Industries.

Official Caution.

Generally speaking, it may be said that Mr. Trevor's conclusions bear out the investigations of private prospectors, but he observes an official caution in his estimates that some authorities may regard as excessive and possibly even discouraging. He admits that "Oil-yielding rocks have been reported from various points more than 500 miles apart and it is possible that with search the area of their known occurrence will spread till it is conterminous with the limits of the Karroo system."

"Though these are usually referred to as oil-shales," says Mr. Trevor, "the term is misleading in many cases. In the Ermelo district of the Transvaal the oil yielding mineral is, when developed at its best, indistinguishable from the torbanite of Scotland." Mr. Trevor gives geological reasons for his contention that "It must not be imagined that one or two beds of rich oil-yielding rock extend throughout the Eastern Transvaal; rather it must be taken for granted that each outcrop found belongs to a separate basin of unknown size, until the contrary is proved by actual development. On the other hand, no deposit should be turned down and abandoned until its limits are clearly demonstrated."

Mr. Trevor then deals in turn with known occurrences—the Northern Waterberg district, Bushveld coals; Vereeniging, Witbank and Transvaal Collieries; Bethal, Ermelo, Wakkerstroom, Piet Retief, Utrecht and Newcastle districts; the properties of the African Oil Corporation (Wakkerstroom district); Johannesloop, Spruitfontein and Winterplaats; Impendhle district; Umkomaas Valley, Orange Free State and Orange River districts.

In three areas the deposits of shale are, in Mr. Trevor's opinion, "sufficiently developed to merit immediate attention, though in no case has investigation been carried far enough to justify the erection of plants." These areas are (a) Ermelo district (Mooifontein and neighbourhood); (b) Wakkerstroom district (properties of African Oil Corporation and neighbourhood); (c) Impendhle, Natal (Duart Castle, Waterfall and neighbourhood).

Ermelo Deposits "Extremely Rich."

The Ermelo district shale, Mr. Trevor describes as extremely rich, yielding from 22 to 98 gallons to the ton. "It probably extends over areas which can be reckoned by the tens of square miles, but insufficient work has yet been done to estimate definite tonnage on any one mining area, or on the whole district, nor have sufficient tests been made to justify any estimate of average richness, though, so far as these go, it appears likely that an average of 40 gallons per ton may be obtained. The existing railway traverses the area, and working facilities are excellent. Unfortunately the seam appears to average little over one foot in width, though greater widths have been encountered."

"The African Oil Corporation has proved on its property the existence of at least 7,000,000 tons of available shale, giving over a mining width of 30 inches a yield of 30 gallons to the ton. This, as it stands, is satisfactory from a mining point of view, but it will become very much more so if further areas of shale are proved." That this will be done appears to Mr. Trevor almost certain. The question is, however, complicated by the distance from the railway, which will necessitate, in order to join the line at Wakkerstroom, the construction of some 18 miles of railway at a cost of about £5,000 per mile. If, however, the proposed port on the coast of Zululand is ever constructed, the position will be entirely altered, for the coalfields of this area will then justify a line from Piet Retief independently of the shale and the property will become excellently situated geographically. "In the meantime," comments Mr. Trevor, "the African Oil Corporation must be commended in that they have exploited their properties in a professional manner."

"The so-called shale of the Impendhle area," adds the Mining Inspector, "is not as rich as that of the two already reviewed, nor does it seem likely to be as amenable to treatment in a retort, for under laboratory tests it intumesces and cokes badly and the deposits are unproved over any mining area. Geographically it is badly situated. The risks, therefore, attendant on its immediate exploitation are far greater than in the other areas, though, when once the industry is established elsewhere it may be found that this field can be worked profitably. As the oil-bearing material more resembles coal than a shale its treatment may not yet be a commercial possibility."

Big Capital Wanted.

Summing up Mr. Trevor's conclusion is: "So far the indications are that there are large deposits of oil shale of good quality in the Union, but the establishment of an oil shale industry is not a simple matter, and success cannot be guaranteed unless the matter is approached with the most careful technical and business forethought. The capital involved in any scheme must be relatively great, and the profits to be earned are not sufficient in the aggregate to stand over-capitalisation or the results of "wild-cat" speculation. The mining risks also are considerable, and no estimates as to richness and quantities are justified unless they are substantiated by development and assay plans similar to those required in the case of a gold mine. This applies particularly to the rich deposits of the Ermelo district."

"Although South Africa appears to possess extensive deposits of oil shales of good quality, the question as to whether the economic production of oil from this shale can be regarded as a commercial possibility would depend largely on the cost of retorting, refining, packing and distribution, and on the market price of imported oils. These are matters which are being investigated by the Oil Fuel Committee appointed by the Union Government for this purpose."

Appended to the report are the results of distillation tests and assays carried out by Professor G. H. Stanley, of the Witwatersrand University.

Recent Developments.

Mr. G. A. Troye, the well-known mining engineer, who is actively associated with the investigation of the torbanite deposits in the Ermelo disctrict, discussed the report with a representative of "The S.A. Mining and Engineering Journal." While admitting that Mr. Trevor has on the whole taken a favourable view of the prospects of this new industry, Mr. Troye thinks he has been unduly conservative, and points out that since Mr. Trevor's last visit to the Ermelo properties, five months ago, there have been considerable developments and further investigations.

On one extension nine additional shafts have been sunk, and these confirm Mr. Troye's contention that the further in the shafts are taken, the richer the yield of oil, the low yields being from the outcrop shales. Mr. Troye bases all his figures on bulk tests and not from a few small samples of shale taken out of bore holes. He has already sent to England and the Continent 30 tons of torbanite, and this week has received from Mr. Arthur Struben, who is associated with him in this enterprise, a request to ship another thousand tons, which is required for experimental tests to be carried out by the experts connected with the torbanite industry in Scotland.

Engineer's Estimates.

Taking pure benzol at 2s. per gallon, motor spirit at 1s. 6d. and lubricating oil at 3s., Mr. Troye estimates that the torbanite will be worth 135s. per ton. Mining costs he puts at 12s. 6d., and the expenses of retorting, refining, packing and distribution would, he estimates, double this figure. This would still leave a very handsome margin of profit."

"I agree with Mr. Trevor that a great deal of work remains to be done," said Mr. Troye, "but surely with the results we have already obtained he is not justified in saying that 'in no case has investigation been carried far enough to justify the erection of plants.' In mining of any kind it is absolutely impossible to predict with certainty, and the only proof positive is when you are actually operating. I am satisfied that we have here a 'worth-while' proposition," added Mr. Troye; "we have bore-holes all over the area, and have not yet met with a negative result. We can prove no more until we actually get to work on a small scale. We have no 'wild-cat' scheme, and no desire for a big flotatation to encourage Stock Exchange speculation. All we want is to call into being an industry that will unquestionably prove a big thing for the country. Mr. Cunningham Craig says there are eight million tons of torbanite proved on our area, and he would not make such a statement unless he was sure."

RHODESIAN MINING NOTES.

According to advices from London, the "Sherwood Star" property has been floated into a company with a capital of £150,000. The company is registered in Rhodesia and Sir Abe Bailey is chairman. A contemporary refers to the property as "near the Cam and Motor," but it is actually much nearer the Globe and Phœnix. Milling is expected to commence before the end of the year. As regards the Lonrho people's other new venture at the Sabiwa, reports are current that the recovery has been good, but this will soon, no doubt, be seen from the output returns.

Truth comments in the financial columns on the fact that the last interim dividend declared by the Shamva Company was not covered by the quarter's earnings, and endeavours to make capital out of one or two points in the consulting engineer's report as indicating a rise in costs. This is, of course, to overlook the exceptionally unfavourable conditions for opening out mining which prevailed during the first few months of this year owing to the heavy rains, and also the good showing as regards development that the Shamva has recently made. As a matter of fact the Gold Fields Group have every reason to be proud of the record of the Shamva, which is certainly their star mine. At the same time it is a good augury of future activity that they have secured an option over the "Legion" (formerly "Mystery"), claims work on which is said to have given such excellent results this year.

A property which is expected to start crushing before the end of this month is the "Ace," on which the erection of a ten-stamp mill is nearly completed. The mine is situated between Umfasimiti Hill and the Kokwe River, and is said to have a large reef of good grade.

Things are progressing favourably at the Broken Hill Mine in connection with the extension of the plant. The consulting engineer, Mr. S. J. Speak, recently visited the mine and was, it is understood, most favourably impressed. Mr. Elsden Dew, consulting electrical and mechanical engineer to the Corner House, passed through Bulawayo on Tuesday on his way back to the Rand after inspecting the work on the water power scheme, which is under his supervision. The scheme has several unique features, and will be the largest south of the Zambesi by the time it is in full swing.—*Bulawayo Chronicle.*

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TRADE SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS QUIET—IRON AND STEEL CONDITIONS—BRITISH TRADE STATISTICS—TIMBER AND BUILDING MATERIALS—METAL QUOTATIONS.

Business this week has been of little import, and the inquiries on the Commercial Exchange have been very restricted in character. A leading commercialist, in conversation this week, stated that, notwithstanding our present depression, indications are there from outside sources that our industries are coming along all right. Engineering firms were getting more inquiries, and not only those, but orders, and every indication pointed to more work shortly. Reports from the industrial districts in respect of the maize crops are most encouraging. Money is coming in, and, of course, being circulated. The next season's wool crop is expected to be a bumper one and be the salvage of the farming community; and, in a measure, through the circulation of money, of some considerable help to the commercial community here. This far-seeing commercialist said that taking a world survey things are to-day a bit slow, but he thought that the present British action would undoubtedly result in good. The British Government is acting in the best interest of the world in general. France is at the moment very stubborn in her Ruhr attitude, but better councils may possibly be looked for in the near future. The initiative taken by Great Britain it is generally thought, is bound to be followed by the United States, who, although disinclined now to take any decided action in the matter, will, it is thought, by her moral support of Britain's policy, help very materially to bring about good results. The general opinion here is that France's stubborn attitude at the moment is decidedly wrong and can only spell disaster if persisted in. Britain's present action is undoubtedly fair, not only to Germany, but to the whole world, and her present policy will, it is thought, be found, even by France herself, eventually to her benefit. Latest reports from Paris show a more compromising action towards Britain's intentions, and the community is not unhopeful that the next week may see clarifying results.

Iron and Steel.

Business has ruled very quiet this week, with few inquiries from the mines on the Commercial Exchange.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s.; 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes about 30s. a ton more; ⅞ and 1 in., 25s.; cheques plates, 27s. 100 lbs.; imported flats, ½ x 3-16, ⅝ x ⅛, 30s. per 100 lb.; ¾ x ⅜, ¾ x ½ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron in flats, rounds and angles, 22s. to 25s.; best mild steel, 22s. 6d. and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, 1d. lb. extra. Copper rods, ¼, ⅜, ½ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb.; ⅝ up to 1½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅝ up to 20 gauge, 1s. 8d. lb.; for lighter gauges 1s. 9d. lb. Brass sheets, ⅝ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin Lamb and Flag, 2 8d. per lb. Phosphor tin, 2s. 10d. per lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 1½d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7-5 16d. lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¼d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in. to 36 in., 10s. 6d. to 11s. 6d.; 42 in., 20s. 6d.; piping, ¾ in., black, 5d.; 1 in., 5¾d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1 in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 56s. and upwards; barbed wire, "Shortthorn," 69 lb., 13½ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 90 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Britain: Mail Week: Iron and Steel: The Outlook.

In mail week the position was one of the quietest. Some very cheap prices have been quoted by Continental makers in several departments. At the moment the tendency of the market is undoubtedly in favour of buyers, but, on the other hand, manufacturers have experienced little relief in the matter of production costs for some little time, and the intention has been expressed in more than one direction to close down works rather than to accept orders at prices which, it is maintained, are below cost. There is no doubt, however, that British manufacturers are to a certain extent meeting the position and giving concessions for attractive business, and, also, are watching very closely developments on the Continent.

Pig Iron.

Prices in this market have developed an appearance of weakness, and for firm business British producers are inclined to make concessions. Probably this is due to a slight increase in the offerings of Continental iron.

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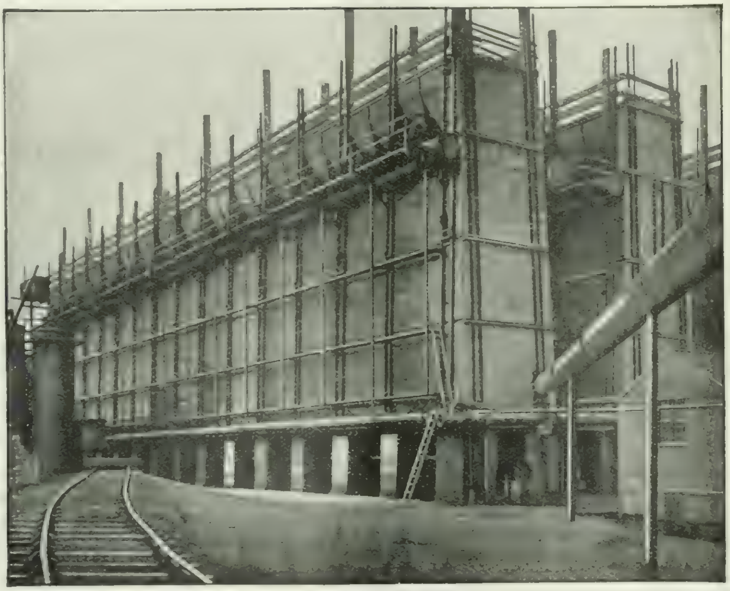

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Semi-Finished Material.

Continental 4 in. billets have been quoted at [illegible] 7s. 6d. and 2 in. billets at £6 10s. 0d. f.o.b.

Finished Material.

One of the Belgian works has accepted orders for joists at £6 15s. This extremely low price compares with quotations of £7 5s. 0d. basis f.o.b. asked by British makers. Continental joists have been quoted at £7 [illegible] to £7 7s. 6d. British standard sections.

Pig Iron Production.

The production of pig iron in Great Britain in May amounted to 714,200 tons. The furnaces in blast at the end of the month numbered 223. The production: 252,100 tons of hematite, 217,900 tons of basic, 158,800 tons of foundry, and 44,100 tons of forge. The output of steel ingots and castings amounted to 821,000 tons.

Iron and Steel Production.

The iron and steel production in Great Britain during April is now announced. The output of pig iron increased nearly 19,000 tons, compared with the previous month, to 652,200 tons. The output of steel, however, declined over 53,000 to 749,400 tons. The statistics for finished steel for March show an output of sectional material amounting to 158,300 tons. The production of plates, ⅛in. and over, reached 97,700 tons, whilst 64,000 tons of tin, terne and black plates were produced. The output of galvanised sheets reached 62,100 tons. The production of hoops and strips totalled 37,300 tons in March, and the production of rails, over 50 lbs., 37,000 tons; rails under 50 lbs., 13,800 tons; and boiler plates, 12,700 tons. The output of wrought iron, including the forge productions (puddled bars and scrap bars) was 70,300 tons, while the finished mill production of sectional material was 46,600 tons; that of rolled tube, hoops and strips, 5,400 tons; and of iron sheets, under ⅛in., thick, 1,000 tons. The total production of wrought iron was 55,200 tons in March compared with 48,900 tons in February and 45,700 tons in January.

Wholesale Prices.

The Board of Trade index number of wholesale prices in May show a fall of 1.5 per cent. compared with the general level in April. The iron and steel group shows two increases and thirteen decreases, of which eight decreases were under 5 per cent. There was a fall of nearly 10 per cent. in the average for soft steel billets.

Quotations.

Pig Iron.—Cleveland Foundry No. 1, 127s. 6d.; No. 3, 117s. 6d.; No. 4 forge, 110s.; mottled, 107s. 6d.; hematite, mixed Nos., 116s. 6d. Finished iron and steel. Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £9 10s.; hard, £10 5s.; bars and angles, £10; tees, £11; joists and channels, £10 5s.. sheets, singles, £13 15s.; doubles, £14 5s.; lattens, £15; plates, ship, £10 10s.; boiler, £14; rails, £10 10s.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots; mild steel fencing, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 19s. 6d. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 23s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 21s. per cwt. Bolts and nuts, 50 per cent. discount. Staffordshire common bars, 14s. 3d., and galvanised corrugated sheets, 23s. per cwt. Tin plates: Basic price, 20 by 14, 6s. 6d. to 27s.

British Iron and Steel Position.

To the courtesy of a foremost local importer we are indebted for the following survey of the iron and steel prospects in England from a leading iron and steel manufacturing firm in Great Britain. As the iron and steel position in this country continues in a troubled state, and as our last circular was welcomed by correspondents, we are writing once more to express our views on the present and future position of the trade. The position is dominated by the Ruhr trouble. Germany has largely curtailed the production of coke in the occupied area, while the French have imported coke from England at exorbitant prices to counter this German move. The Germans have continued production in some cases, of coal and iron, in advance of deliveries, as they were in fear that the French would commandeer them. The consequence is that there will be a considerable amount of manufactured or semi-manufactured material presently hanging over the market when a settlement arrives. This factor is, of course, restricting the confidence of British importers, and we believe operates more than anything else towards a reaction of prices of iron and steel, which are not likely to fall very substantially below present levels. There is at present no margin of profit, and the present position must make for a rise in prices eventually. Business generally in this country at present appears to be flat. To-day it is always well to keep the fact of any settlement of the Ruhr position in mind, which will, of course, alter the iron and steel position.

Britain's Oversea Trade, January-May.

Despite a lapse in February and April, the total value of Britain's overseas trade for the first five months of 1923 is less than £35,000,000 below that of the corresponding period of 1921, and nearly £73,000,000 above that of the first five months of 1922. These figures may be taken as an indication that British trade is not so sick unto death as some commercial Cassandras would have us believe. Exports are higher than they were in January, 1921, and higher than they have ever been since; and the adverse balance of trade now lower than it has been at any time during the past three years. Imports show a healthy advance on last month.

Oils and Paints.

Motor spirit, 1s. 7d. to 2s. 2d. in cans; linseed oil, raw, 4s. 1d. to 4s. 3d.; boiled, 4s. 4d. to 4s. 6d.; gas engine oil, 2s. 7d.; machine oil, 2s.; separator oil, 3s. 11d. to 4s. 1d.; colza (pure), 4s. 10d. to 5s.; petroleum, 1s. 1d. per gall. Paints, in 5-cwt. lots, 74s.; red lead, 42s. to 43s.; white lead, 45s. 6d. to 55s.; zinc oxide, 37s. to 52s.; turpentine, 9s. 2d. to 9s. 4d.

Second-hand Machinery.

A lot of business, said a prominent dealer this week, has been done during the past fortnight; large parcels of piping have changed hands, one company alone taking 5,000 ft. of the big size. Although piping at the present time is not overstocked in the market, there are still sizes of it which are scarce. There is also a big scarcity of second-hand rails from 12 lbs. to 80 lbs. per yard, and also of small cocopans. There have been several inquiries about town for small boilers from 10 to 50 h.p., and one inquiry for 135 h.p. boilers. There are several orders in the market for certain classes of engines and boilers which are unobtainable just now; only a few months ago we had plenty. Of course a lot of machinery has left the Rand during the last six months for several industrial propositions which have started in the Free State and Natal, and there is no burking the fact that if more machinery is not imported into the country there will be a great scarcity within the next twelve months for all kinds of machinery. It is a well-known fact that there has been very little new stuff come to the country during the past ten years. As previously stated, Johannesburg is really the depot for this class of material and has been exploited extensively for all classes of machinery, so that the scarcity is bound to show itself. Certain sizes of engines and boilers cannot be obtained and substitutes will have to be purchased. With regard to electrical machinery, motors, etc., there has been quite a lot of second-hand stuff sold, but there is still a large quantity to be had, particularly of a lower voltage as used by many of the old companies which have closed down which generated their own power before the V.F.P. supplied curcost. There are a great number of these motors still in stock, which can be obtained at almost any price. Generally, dealers are doing very good business.

United States: Steel.

The unfilled orders of the United States Steel Corporation have dropped 307,158 tons to 6,081,351 tons. This is considered a moderate balance in view of the high rate of production, and it is estimated that the corporation is assured of full operation for the remainder of the year. Operations in the steel trade generally are somewhat lighter and average 1 per cent. less at 92 per cent. of capacity, with the independent works working at 90 per cent. and the Steel Corporation at 94 per cent.

Pig Iron.

Basic is quoted at $27.50 and Bessemer at $29. Western Pennsylvania foundry pig iron at $29.

Semi-Finished Materials.

Sheet bars, $41 to $45, with reported sales for third quarter delivery at $42.50.

Finished Materials.

Prices, $2.40 for plates, shapes and bars. Heavy machine bolts are quoted cheaper for third quarter delivery at a discount of 50 per cent. and 10 per cent. off list; nuts are quoted at $3 to $3.25 off, compared with the recent $2.75 and $3.

The Steel Output.

The American Iron and Steel Institute's figures of the steel ingot production of thirty leading works during May were 3,537,753 tons, a gain of 216,475 tons over April. The production for the five months of this year was 16,431,749 tons, and was equal to a rate for the entire trade of 49,850,000 tons per annum.

American Exports of Copper.

These for April were as follow: Great Britain, 4,300 tons; Belgium, 1,800; Germany, 4,476; France, 7,170; Italy, 1,680; Holland, 260; Spain, 370; Sweden, 790; Canada, 1,170; China, 1;700; other countries, 140; total, 23,940 tons. Prices have become weaker following an impaired export demand. Quotations are 15c. to 15.12c. f.a.s. for home, 15.30c. to 15.35c. c.i.f. Europe.

German Competition.

The "Ironmonger" in mid week had an interesting article from a contributor living in Germany on German competition, which throws an interesting side-light on the actual state of affairs there. Briefly, this dweller in Germany says German competition presents a complicated problem, including, as it does, the labour question, the supply of raw material, the state of plant and management, the financial situation of industry and the relations between industry and a Government which under "force majeure" is compelled to have Socialistic leanings.

Germany; Foreign Ore.

The supply of foreign iron ore by ship to the occupied area has ceased entirely. Up to now the Swedish producers have been unable to come to an understanding with the French authorities there, and the German works still decline to comply with the French regulations. Only small parcels of ores for the manufacture of special sorts of pig iron are imported by rail, and even this import is very difficult.

The Bing Co.

The engineering and metallurgical works of Bing Bros., of Nurnberg, have developed in an extraordinary degree since the war, and have formed amalgamations and alliances which have extended the activities of the business in many directions. The business report for 1922 states that the organisation now controls various important works in addition to an iron and steel works in Dusseldorf. The organisation now employs 16,000 workpeople. With a depreciating mark, German industry will always be able to compete. The financial strength of German industry far exceeds that of the Government and of the State bank combined. German competition will become a serious problem only if the mark be stabilised. The advantage of cheap labour in Germany is, however, offset by reduced efficiency. The German workman has no inducement (under prevailing conditions) to exert himself to the utmost.

Profits of German Companies.

The 5,500 corporations which existed in 1913 and represented the larger part of German industry, had in that year a nominal capital of 17·4 billion marks, with a marketable value of 30·7 billion marks. The 10,000 corporations existing now represent on the basis of the quoted value of their shares, a sum of 4·9 billion gold marks only. The first consequence of a mark stabilisation will be, as far as manufacturers are concerned, stagnation of business and growing unemployment, which will give industry the upper hand in the labour question.

Belgium.

Export business remains dull, although a few orders have been booked for No. 3 iron at prices ranging from £7 2s. 6d. to £7 12s. 6d.

British Trade Statistics.

June figures show a decline on May. Imports totalled £89,307,000, a decrease of £171,000 compared with May, and exports amounted to £62,883,000, a decrease of £8,617,000. Re-exports totalled £10,954,000.

Brevities.

The coal output of the mines of Great Britain during the week ended June 2 was 5,727,000 tons.

Timber and Building Materials.

Timber merchants report a very fair business during the past week. Stocks are good, with the exception of certain sizes of scantlings, which should be rectified within a short time.

The building trade this month has not been so brisk as generally expected, but orders in hand and about to be given out are keeping contractors cheerful.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3¾d.; floorings, 6d. to 6¼d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d. to 9d., very firm. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s., at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot, at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 3d. to 1s. 4d. per foot of 1 x 12, here; American pine shelving, 9d. per foot, 3-ply wood, 3m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. foot; oak and teak, 3-ply, 10d. per sq. foot. Brick Prices, etc.: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 6s.; 15 in., 7s. 6d.; 18 in., 9s.; dry red oxide, 14s. per 100 lb.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

Latest Metal Quotations: London, July 16.

Standard copper, £64 17s. 6d. cash, £65 12s. 6d. three months; electrolytic copper, £72 10s. sellers, £73 buyers; copper bars, £73; standard tin, £178 17s. 6d. cash, £180 2s. 6d. three months; foreign lead, £24 prompt, £23 10s. forward; quicksilver, £10 10s. per bottle; bar silver, 30¾d.; bar gold, 89s. 5d. per ounce.

SHIPS AND SHIPPING.

THREE-MILE LIMIT CONTROVERSY—WEST AFRICAN COAST ACTIVITIES.

(From our Special Correspondent.)

Scuttled!

It is not often that allegations of scuttling are made and sustained in the law courts. In the King's Bench Division after a hearing lasting twelve days, Mr. Justice Roche held that the steamer "General Turner," had been so lost.

Two claims under a policy of marine insurance against war risks were made against the London and Scottish Assurance Company, Ltd. It was alleged that the vessel on a homeward voyage, in the Black Sea on June 11, 1921, struck a water-logged mine at midnight, and that she sank five and a half hours afterwards. Mr Justice Roche said he came to the conclusion that the owner, Mr. Moumjoglou, a Greek merchant, was privy to the deed. He added that he did not believe Mr. Moumjoglou's evidence, and regarded his emphasis and derision as histrionic, and not either real or sincere.

Sailors Lured Ashore.

Vessels trading to the ports of North America are finding it more and more difficult to keep their crews, who are being lured to shore jobs in increasing numbers by the prospect of high pay.

The "Homeric" sailed on Saturday with forty of her crew missing. Other vessels are having similar experiences, especially British ships, because the crews can be more easily reached through the same language by agents of employment firms. These agents, operating along the docks, are explaining to crews that positions worth from £2 to £3 a day are awaiting them on shore. When a member of a crew agrees to desert it is an easy matter to evade the immigration guards. Then the deserter is usually taken in a taxi-cab to the agency's office and sent to his job. The agent receives £1 for every man thus persuaded to remain ashore.

Compressed Air for Salving Wrecks.

Mr Charles A. Sherman, first vice-president of the Reno Marine Salvage Corporation of New York, who is now in London, has been describing the method by which many hundreds of ships with valuable cargoes sunk during the war can be brought to the surface.

Mr. Sherman is hoping to secure for his company a definite contract or option on some sunken ship, with a reasonably valuable cargo, so as to demonstrate that the Reno system is a commercial as well as a mechanical success. While employed during the war by the United States Government to devise some means of combating the German submarine, Mr. Reno, the patentee of the system, had an opportunity of studying undersea conditions, and his system of salving ships by compressed air pumped into a series of multiple unit, open-bottom vertical pontoons submerged to the depth at which the sunken vessel lies and there securely fastened to the hull, is, it is claimed, an original one.

The basic claims of the system consist of (1) a mobile working chamber or tractor able to manœuvre under its own power on the sea bed, having means for drilling holes in the plates of a ship and also for hauling down and attaching pontoons to the sides of a sunken vessel; and (2) an open-bottom vertical pontoon, fitted with an internal strain band and truss construction, suspended from which are equalising levels and means of attachment by which the pontoon is securely fastened to the side of the sunken ship. Speed is, of course, an important factor in salvage work, and it is estimated that three or four months will be sufficient in ordinary circumstances to raise a ship.

Disappearing Sailing Ships.

Since steam ousted sail from its proud pride of place in the British mercantile marine, Norway has proved a harbour of refuge for many of the old-time windjammers which created and for long maintained the maritime commerce of this country. Now Norway, it seems, is rapidly reducing her once big fleet of sailing vessels.

At the moment there are only eighty steel and iron sailing ships flying the Norwegian flag, or 320 fewer than in the first year of the great war. The sail tonnage entered in the Norwegian Shipowners' Association aggregated 362,000 tons register in 1914 and had dwindled to 141,000 tons by the end of last year. This passing away of the old sailer will be lamented genuinely by those shipowners whose vessels underwent the gradual transition from sail to steam. No fewer than twenty vessels of the type have been taken out of commission since the beginning of the present year. Three, it is true, have been disposed of for operation abroad, but fifteen of the others have been acquired by shipbreakers. Of the eighty vessels now remaining, fifty one are trading and the rest are laid up. Christianssand, which was formerly—and not so long ago at that—the leading Norwegian sailing ship centre, possessing a sail fleet of no mean magnitude, can now boast only fifteen of the old-time sailing ships.

TRAMP OWNERS AND HAGUE RULES—EXEMPTION FROM LEGISLATION WANTED—DOMINIONS' ATTITUDE.

LONDON, June 29.

The Baltic and White Sea Conference, at Gothenburg, has, through the President, Mr T. E. Salvesen, of Leith, and Mr. Robert Temperley (legal adviser to the Conference), of Newcastle, expressed the nervousness of tramp owners over the legislation proposed by the British Government to give effect to the revised Hague Rules.

In Mr. Salvesen's view, shipowners are faced not with a voluntary code for embodiment in their documents in those trades for which they are suitable, but with a system of over-riding law throughout the various maritime countries, rendering illegal the shipment of goods otherwise than on the terms of this particular code. He emphasises that the "tramp trades, both shipowners and merchants, have never asked for Government regulation of their contracts, nor are they aware of any public interest which justifies such interference. One and all, they look upon freedom of contract as the very life blood of enterprise. In the past they have arranged the conditions of shipment between themselves as a matter of negotiation and bargain, originally between individuals and latterly between bodies of practical men well acquainted with the trades and representing all the interests involved." In view of the fact that other countries are likely to follow the lead of Britain in accepting the revised Rules, Mr. Salvesen regards the outlook as serious. "So far as the liner trades are concerned, the case against legislation is not a hopeful one. But when it comes to tramp trades the question really seems to be whether it is possible, by amendments in the proposed legislation, to except them [illegible] question of the code giving the tramp trade as a whole or at any rate that portion of it in which it may be shown that [illegible] to the form of contract between [illegible] and [illegible] which [illegible] constitute contract.

Government Pledge to Dominions.

Mr. [illegible], who addressed the Conference on "The Hague Rules, Tramp Shipowners and Imperial Legislation," [illegible] the position as it seemed at the moment that the Hague rules [illegible]. He said that in his opinion the case for the legislative regulation of the conditions of shipment of general cargo for the liner services had been amply established; that it was in the highest degree desirable that the legislation necessary for that purpose should be imposed on a uniform basis by all the maritime nations simultaneously; that the adoption of the Hague Rules, 1922, by the nations [illegible] an opportunity which might never occur again, of achieving this result; and that no other line than to facilitate this object by [illegible] the difficulty involved with regard to bulk cargoes.

The [illegible] fact of the whole affair has culminated in the present embarrassing position appears to be a certain pledge given by the British Government to the British Dominions in 1921. In the year 1920, the British Government, at the instance of the British Dominions, appointed a committee, called the Imperial Shipping Committee, for the purpose, among other things, of inquiring into complaints with regard to the conditions of the ocean Imperial trades, and in February, 1921, that Committee presented a report in which it recommended the introduction of uniform legislation throughout the British Empire on the lines of the Canadian Water Carriage of Goods Act, 1910. The British Government accordingly pledged its word to the Dominions to introduce such legislation.

Proposals Too Drastic.

It was this recommendation and this pledge which gave rise, in the first place, to the formulation of the Hague Rules as a voluntary code, the adoption of which by the liner companies would, it was hoped, obviate the necessity for the proposed legislation and thus save the hand of the British Government; and, in the second place, to the diplomatic International Maritime Conference at Brussels in October, 1922, which resulted from the determination of the British Government to carry out its pledge and the anxious desire of the Governments of the other maritime countries to come into line on a matter so widely affecting international shipping interests.

Now the recommendation of the British Imperial Shipping Committee made no distinction between the general and bulk cargo trades—that is, between liners and tramps. Hence, the pledge of the British Government appears also to have applied to all shipping, and consequently the Hague Rules, 1922, which are incorporated in the proposed British legislation, are likewise of general application. This fact being the real origin of all the present trouble, I have thought it worth while to look into the report of the Imperial Shipping Committee and the evidence on which it was based, in order to ascertain why tramp shipping was thus included in the recommendation.

No Grievance Against Tramps.

"I have made a careful examination of the report itself, of the summary of evidence attached to it (which is the only form in which the evidence has been published), and of other documents referred to in the report so far as available. The contents of these documents point, so far as I can see, to the surprising conclusion that the unqualified inclusion of tramp shipping was due simply to an oversight. From the documents, the inquiry of the Committee seems to have been purely a liner inquiry—that is to say, one arising out of a liner agitation and conducted by a committee which was selected with a view to a liner problem, which based its report on evidence applicable in effect solely to liners and which entirely overlooked the poor tramp ship."

For British owners the time for appeal had expired. The most they could do was to point out that there was no evidence of any grievance of the Dominions against, for example, the British tramp owners in the coal export trade, or in the coasting and the short-sea trades, and that the Dominions could not therefore reasonably object to the [illegible] the Bill now before Parliament which had been proposed [illegible] to meet the cases of those trades. But the Governments of the Continental maritime countries were, so far as he knew, untrammelled by any such pledge. Those Governments appeared to be free to exempt from statutory control in regard to conditions of shipment the bulk cargo trades, or any particular portions of those trades, if, as appeared to be the case, such exemption was justly demanded by those interested in the shipping industry. Eventually the conference passed the following resolution: "After a long discussion this meeting of the Baltic Conference, an association of shipowners from 15 maritime nations, British members and the United States Shipping Board dissenting, considers a uniform international law governing bills of lading is preferable to the enactment of separate national laws with their consequent diversity, but does not consider the Hague rules, as formed at the diplomatic conference, Brussels, in October, 1922, are acceptable in their present form. The conference is of opinion that some of the provisions in the rules are undesirable and unreasonable, and that the wording is, in some instances, defective. The conference notes that at the Brussels diplomatic conference many of the delegates were without instructions as to the attitude of their respective Governments on the subject. It is considered that a further conference should be held after the Governments have had the opportunity of consulting the various interests concerned. The conference, therefore, hopes representations may be made to the British Government with a view to the bill now before the British Parliament being deferred until such further conference shall have been held, and an international convention concluded. The Baltic Conference is further of the opinion that an endeavour should be made to limit the scope of such convention to liner traffic and to exclude from its application shipments made under charter-parties, the conditions of which are mutually agreed and incorporated in the bills of lading."

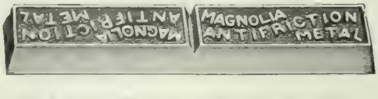
INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

August 10.—Transvaal Consolidated Lands (s), 12 noon.
Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.
September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.
November 16.—Sub Nigel, Ltd. (a), 11.30 a.m.



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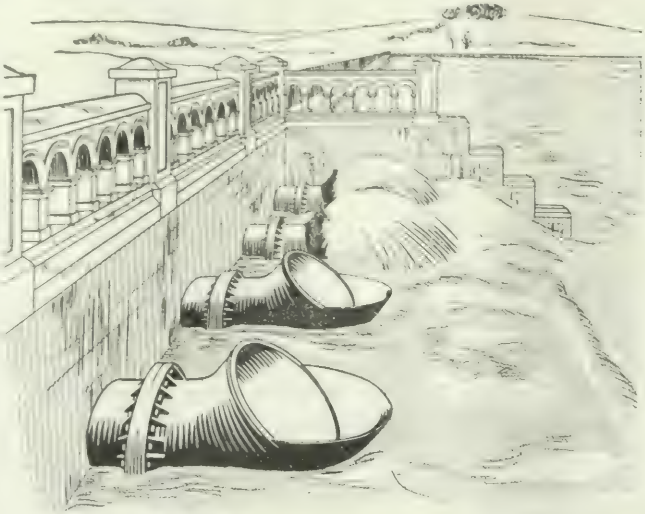

The Chingford Group of Humphrey Pumping Installations [illegible] for the Metropolitan Water Board, London, in 1913. The record Coal Consumption [illegible] 0.773 lb. per W.H.P. [illegible] ned.

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DRAINAGE
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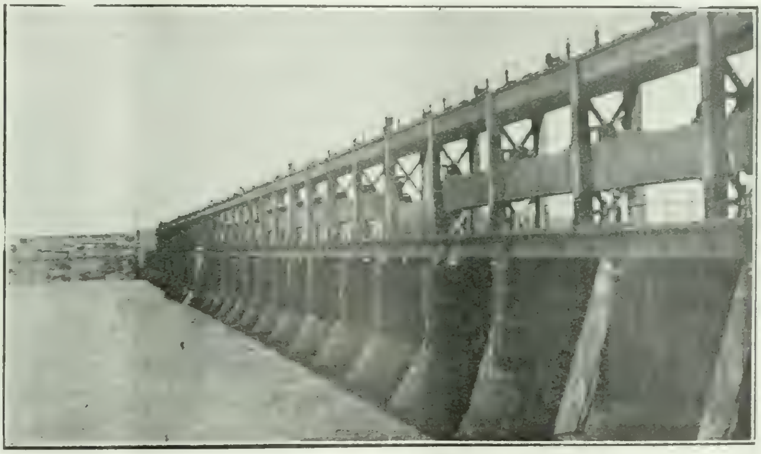
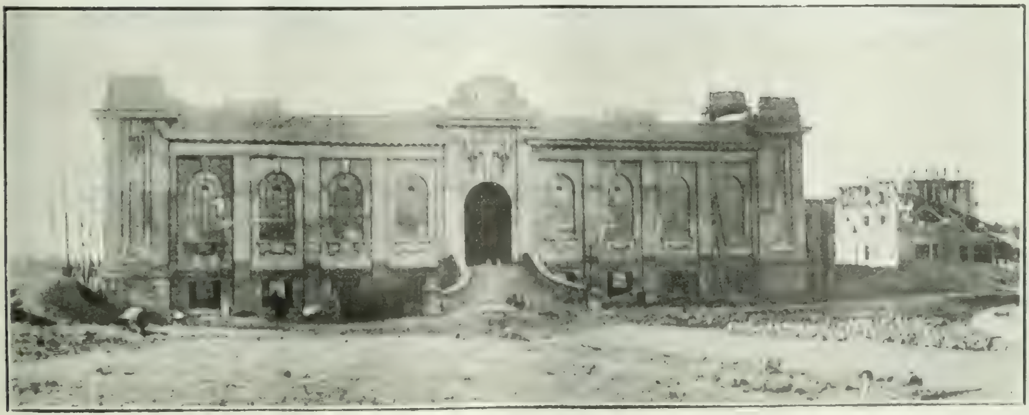
Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, JULY 28, 1923 No. 1661

A Triumph of South African Engineering.



View of the Barrage taken from the Free State side.



The Pumping Station at Vereeniging: Engine Room and Boiler House.

The event of the week has been the inauguration by H.R.H. Prince Arthur of Connaught of the Vaal River scheme of the Rand Water Board. The ceremony took the form of an official opening of the Barrage, and the starting of the pumping station, illustrated above.

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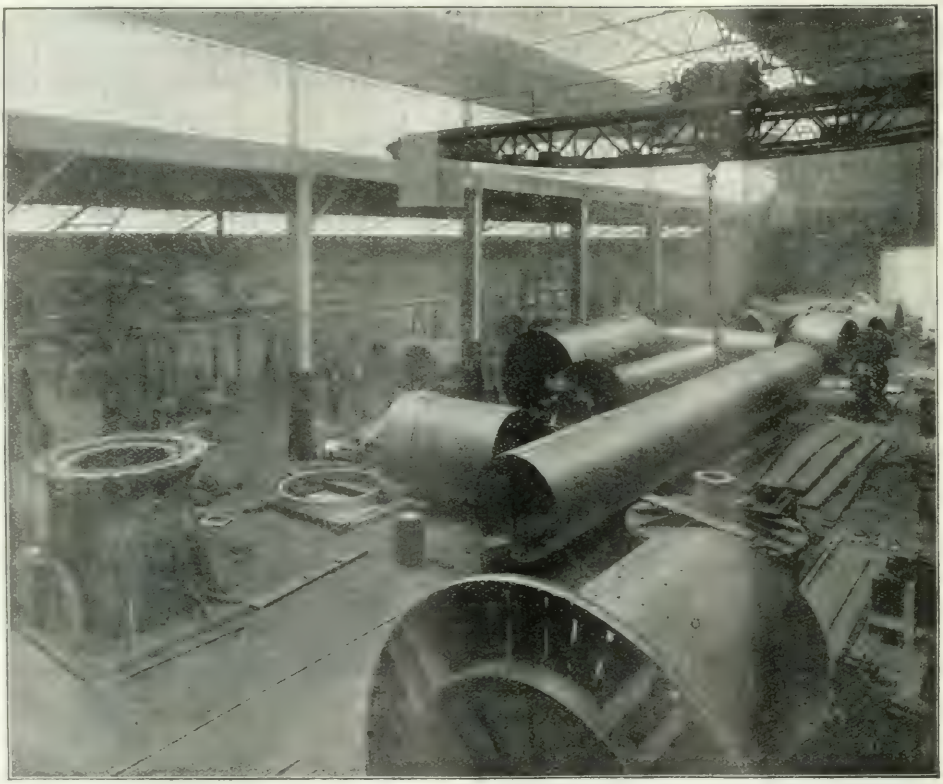

View of Work in Progress.

Edgar Allen & Co., Limited,

Imperial Steel Works,
Sheffield

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Crown of a Great Engineering Achievement.

VAAL RIVER SCHEME OFFICIALLY INAUGURATED BY THE GOVERNOR-GENERAL—A MONUMENT TO MR. INGHAM'S GENIUS—RAND'S WATER SUPPLY ENSURED—OUTSTANDING FEATURES OF IMPRESSIVE UNDERTAKING.

An historic event in the annals of engineering in South Africa was the official inauguration yesterday of the great Vaal River scheme of the Rand Water Board. The ceremony, performed by H.R.H. Prince Arthur of Connaught, in the presence of a large and representative gathering, marks the crown and triumph of the great engineering achievement which is due to the genius of Mr. W. Ingham, the Chief Engineer to the Board. Full details of the scheme have already appeared in our columns, but a few of the outstanding features may be put on record. The scheme is the outcome of the investigations made by Mr. Ingham as far back as 1911 with a view to securing a permanent source of water supply for the Rand. By the construction of a barrage across the Vaal River, twenty-five miles down stream from Vereeniging, the Board has now created a storage reservoir in the bed of the river which is capable of impounding 13,633 million gallons of water. Like many South African rivers, the Vaal carries large quantities of silt during flood periods. In the course of an average year, about 16 million cubic feet—equal to one million two hundred thousand tons—of silt are carried down the river past the barrage. With a view to avoiding the accumulation of silt in the reservoir area, the barrage type of structure, consisting of a series of sluice gates, was selected for damming the river. This design also affords the greatest measure of control in regard to the passage of large floods through the reservoir and avoids the attendant risk of damage to private property along the banks of the river within that area

Mr. T. A. R. Purchas,
Chairman of the Rand Water Board.

Details of the Barrage.

The barrage has been constructed about 25 miles down stream of the Vereeniging railway bridge, but the point of abstraction is about 1½ miles below the railway bridge, where the river pumping station has been constructed. The original width of the river at the barrage site was 620 feet, but the length of the barrage is 1,400 feet. The object of cutting into the banks of the river to such an extent was to increase the waterway so as to compensate for the area taken up by the concrete piers and gates, even in case of injury to the gates, so that no question would arise in future in regard to the obstruction of the natural flow of the river during high floods. The additional waterway is approximately 10 per cent. greater than the largest flood area. The rock at the barrage site was continuous for the whole width of the river, and no difficulties were encountered in obtaining a good foundation.

Work at the Site.

At the barrage site, 275,000 cubic yards of rock, blue shale, clay and earth have been excavated. Hydraulicing was adopted for removing the earth, clay and earth on the Orange Free State bank. The plant installed for this work included a Sulzer centrifugal pump, capable of raising 2,100 gallons per minute against a head of 80 lb. per square inch. A 250 horse-power steam engine was installed for driving the pump by means of a Renold's chain. The delivery pipe [illegible] the pump was 16 inches diameter, and had three 8 inch branches. Three "Monitors" were used for removing the material, and the nozzles were 1½in. and 1¼in. diameter.

The 36 Steel Sluice Gates.

Provision has been made to open the gates about 1 ft. 6 in. above the highest known flood level, which occurred in November, 1917, when a depth of 29½ ft. was recorded at the barrage site. Up-stream of the slots in the piers which house the rack of the main gates a further set of slots is provided for inserting a spare gate to close the opening should it be necessary at any time to remove the main gate for repairs, and two spare gates are available for this purpose. In order to release the spare gate easily a valve has been fixed in the gate so that water can be allowed into the space between the gates after the main gate has been replaced in position. A railway track has been laid along the whole length of the barrage, on which a Goliath crane, driven by a petrol engine, travels for transporting the gates. The track is carried from pier to pier on reinforced concrete girders, which are 10 ft. apart. The whole of the excavation and concrete work was carried out departmentally, but the gates were made by Messrs. Glenfield & Kennedy, Ltd., of Kilmarnock, to the design of the Chief Engineer of the Board, and the contract price for the supply and erection of the gates was £162,000, but this did not include the [illegible] roller paths, which were made locally. Messrs. [illegible] & Co., Ltd., Johannesburg, were the local agents for the makers of the gates.

Salient Features.

The principal particulars of the barrage are as follows:—

Excavation ...	275,000 cubic yards.
Stone crushed for Concrete	43,000 cubic yards
Sand	20,000 cubic yards
Concrete	41,000 cubic yards
Cement	11,000 tons
Materials transported to the Barrage from Vereeniging ...	21,000 tons
Length of Reservoir	40 miles
Contents	13,633,000,000 gallons
Number of Gates	36
Depth of Water at Barrage	25 ft. 1 in.
Net size of Gate openings	30 ft. wide by 25 ft. deep
Weight of each Gate	26 tons
Total weight of each Gate and Appurtenances	100 tons
Length of Barrage	1,400 ft.

Mr. William Ingham, M.Inst.C.E., M.I.Mech.E.,
Chief Engineer of the Rand Water Board.

Cost of Scheme.

The engineering expenditure in connection with the barrage and the first unit of five million gallons a day was estimated to amount to £1,361,700, but it is anticipated that a saving in the neighbourhood of £40,000 will be effected on that estimate. The following particulars show the approximate final cost of constructing the barrage and of the

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WRIGHT'S ROPES

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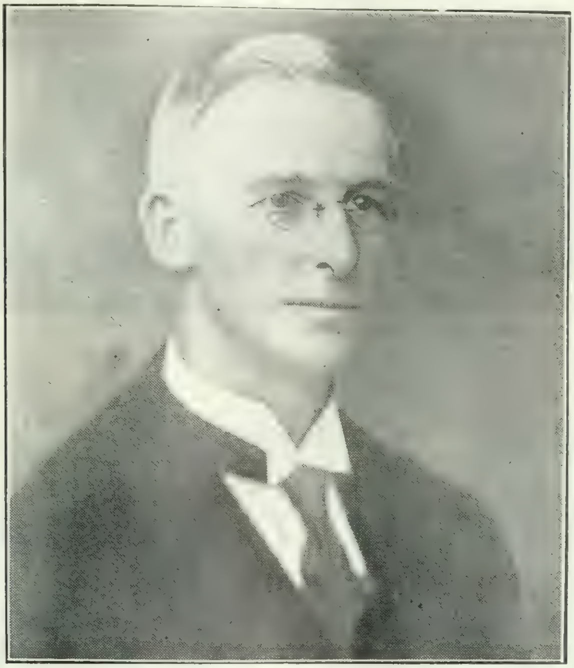
installation of the plant, mains, etc., in connection with the first unit of five million gallons a day:—

Particulars.	Approximate Final Cost.
Preliminary Expenditure	£47,000
Barrage, Weirs, etc.	755,000
River Pumping Station, Vereeniging	24,000
Vereeniging Main Pumping Station	95,000
Staff Quarters, Vereeniging	12,000
Sundry Buildings, Vereeniging and Barrage	7,200
Precipitation Tanks, Filters and Sterilisation Plant	59,000
Service Reservoirs	66,300
Laying out Grounds, Boundary Walls, etc.	7,000
Railway Siding, Vereeniging	1,729
Pipe Lines	155,000
Extensions to Zwartkopjes Pumping Station	52,000
Telephones and Transmission Lines	3,171
Land and Wayleaves	36,000
Approximate Total Engineering Expenditure	£1,320,400

In addition to the above mentioned engineering expenditure, amounting to £1,320,400, a sum of £186,000 has been debited to the scheme in respect of interest during construction and loan flotation charges, making a total expenditure of £1,506,400 approximately.

The pictures reproduced as frontispiece this week and in other parts of this issue will enable the reader to visualise some of the gigantic figures and features of this great engineering achievement.



Mr. J. C. Hawkins, M.Inst.C.E.,
Resident Engineer for Construction of Barrage.

Angola Diamonds.

Cable advices have been received in London from Angola reporting a decided improvement in the labour situation. Expert advisers sent out to the properties by the Société Internationale Forestière et Minière du Congo Bélge (generally called the "Forminière," and closely allied with the Angola Diamond Company), have recently been assisting with the organisation of mining operations and with the installation of plant, which, it is officially stated, will benefit production in a marked manner during the second half of this year.

Beira Port Development.

For the first time some indication of the imminent port developments at Beira, in respect of which it is understood Sir George Buchanan is furnishing plans, is given by *The Beira News*, which states the position which is expected to result from the early developments of the Zambesi coalfields so as to assure a minimum traffic of 300,000 tons of coal per annum from the pit-head to Beira. The success of these coalfields is dependent on three happenings: (1) The construction of a direct line to the coalfields; (2) the laying down of the great bridge over the Zambesi to connect the Trans-Zambesi Railway with the Nyasaland system; and (3) the development of the port of Beira to cope effectually for many years to come with the inevitable expansion of trade, industries and production in the hinterlands of Rhodesia, the Congo and Nyasaland, and around the lake regions of the Protectorate and the neighbouring districts of North-Eastern Rhodesia, all of which find their natural outlet at Beira. The opening up of Nyasaland by the laying down of further railways form an Imperial obligation that cannot be evaded, for the vast tracts of highly valuable country on the western side of Lake Nyasa and the eastern district of Northern Rhodesia, which geographically are part of Nyasaland, are even now dependent on the route *via* Nyasaland to Beira for their means of transport and communication.

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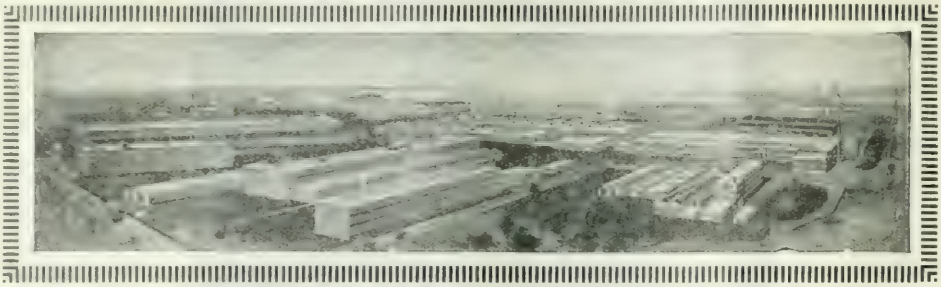

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PRIME MINISTER PRESENT—SOME NOTABLE PRONOUNCEMENTS—LABOUR AND TECHNICAL QUESTIONS.

The Prime Minister was the guest of the evening at the annual banquet of the Chemical, Metallurgical and Mining Society, which was held at the Scientific and Technical Club, Johannesburg, last Saturday evening. Those seated at the principal table included the President of the Society, Mr. F. W. Watson, the Right Hon. J. C. Smuts, P.C., Mr F. R. Phillips, Principal J. H. Hofmeyr, Mr. and Mrs. H. S. Smits, Mr. and Mrs. W. Elsdon Dew, Mr and Mrs. J. Roy and Miss Roy, Sir Julius Jeppe, Mrs. R. H. Gould, Mr. and Mrs. J. E. C. Lawrie, Mr. A. J. Walton, Mr. and Mrs. W. Ingham, Mr. and Mrs. Alex. Aiken, Mr R. H. Gould, Mrs. F. W. Watson, Mr. H. O. Buckle, Sir W. Dalrymple, Mr. E. G. Izod, Professor J. G. Lawn, Dr. H. H. Green, Mr. R. Craib, Mr A. C. Whittome, Mr. W. A. Martin, Dr. A. B. Tucker, and Mr. J. S. Hancock.

Mr. H. O. Buckle, President of the Transvaal Chamber of Mines, proposed the toast of "The Chemical, Metallurgical and Mining Society of South Africa," mentioning that this Society was a nucleus of the scientific brains that contributed to make the mining industry the first industry of the country.

The President's Speech.

The President, Mr. F. W. Watson, said, *inter alia*: It is my privilege to-night to reply to the toast of "The Chemical, Metallurgical and Mining Society of South Africa," and, first of all, I wish to thank Mr. Buckle for the kind words he used in proposing the toast and the ladies and gentlemen for the hearty manner in which it was received. We are all delighted to have the Prime Minister with us to-night, and I can only express to General Smuts how much we appreciate the honour he has paid our Society by consenting to be present at our dinner. The Prime Minister is not very often in Johannesburg, and I am sure all the associated societies feel extremely gratified that he has visited our clubhouse on this occasion. You will see by the menu that this is the annual dinner. I am afraid that in recent years the term "annual" has been a misnomer, as we have not had a Society dinner since May, 1920, and, curiously enough, on that occasion there was also a chemist as chairman. This might seem as if the metallurgical and mining presidents were shirking the job. I do not intend to reply to that, as they are quite able to reply for themselves, but, like everything the Chemical, Metallurgical and Mining Society does, there is a scientific reason attached. The samples we have been considering to-night are not mining or metallurgical samples, but might well come under the Food and Drugs Act, so that there is some scientific reason for having an analyst in the chair.

Mr. F. W. Watson.

President this year of the C.M. and M. Society, at whose annual dinner he presided last Saturday night.

A Tribute to the Chamber of Mines.

Another feature of this dinner is that it is the first we have held in our new clubhouse, and it is, therefore, most appropriate that the President of the Chamber of Mines should have proposed the toast, as if it had not been for the Chamber of Mines and others, but the Chamber in particular, we should never have had a clubhouse at all, and not only this Society, but all the associated societies, are under a huge debt of gratitude to the Chamber of Mines for the magnificent response they made to our appeal for help in the joint housing scheme. The Society, as you know, is one of the oldest of its kind in this country. It is now in its thirtieth year, and is thus only about two or three years younger than the sister London institution, the Institution of Mining and Metallurgy. I do not intend to delve into past history, but I am sure that I can safely say that the Society has been a power for good by giving opportunity for

THE SCIENTIFIC AND TECHNICAL CLUB.

Where the C.M. and M. Society held a highly successful annual dinner last Saturday night, at which the Prime Minister and heads of the mining industry were present.

[illegible] of these and by completion of its [illegible] asset, from a journalist's point of view, the monthly journal. This journal has a high reputation not only here, but in other parts of the world. Being an open Society—that is, no professional qualification is necessary — the field naturally covers a wide range of different interests. The acquiring of new clubrooms by the associated societies has also increased the value of the Society to members, as the reading rooms and all other conveniences of the club are at their disposal.

Need for Industries.

The papers and discussions have naturally had most to do with the gold mining industry, but we are extremely anxious to have papers on industrial questions, as it is recognised that development of industry is one of the main things we have to aspire to in this country. It is up to the Government and everyone else concerned to push industrial development as far as lies in their power, and I am sure that free interchange of views in a Society such as ours cannot but be beneficial to industrial undertakings in the same way as it has been of inestimable value to the gold mines. We have lately had papers on coal and steel, and we have promises of contributions on other industrial ventures which we trust will bear good fruit.

Other Papers.

The Society has not been content to stop at papers on the three branches mentioned in its title, but we have had papers on finance. Personally, my knowledge of finance leads to one conclusion, that I don't handle enough of the root of all evil and what I do handle goes away too quickly. I am certain that the Chancellor of the Exchequer could have had some valuable tips for preparing his Budget if he had attended our meetings. The inflation and deflation which money has experienced makes one wonder how the wretched paper on which the notes are printed can stand it. In the mining section the papers of most interest to laymen have been on prevention of phthisis, and extremely valuable work has been done and information disseminated in connection with this most vital problem. I can assure everyone here that there is no lack of ginger in these meetings; one has only to mention the word konimeter and "the wigs are on the green." On the metallurgical side, a few years ago it was thought that we had got down to bed-rock and very little remained to be said. Big advances have been made recently, and the practical elimination of mercury poisoning by use of corduroy instead of amalgamation is the most marked feature. This last innovation, it is hoped, will reduce loss by theft. So far no metallurgical process has been found to prevent loss by the simple method of throwing the finished article out of a railway carriage window.

A Research Fund.

The Society is always anxious to encourage research, and an endowment fund has been established by contributions from several generous donors. The income from this is devoted to awarding medals for papers showing the spirit of research. This fund has not been started very long, but it is bearing good fruit, and should be an inducement to younger authors to come forward with papers.

Saved by Work.

Professor J. H. Hofmeyr, in proposing the toast of "The Union of South Africa," remarked that there was too much tendency in this country to await the coming of prosperity without making actual endeavours to that end. The country, continued the speaker, was rich in potentialities, but unless efforts were made by brain-worker and hand-worker to convert those potentialities into actualities, the country would never become rich. We needed to get down to bed-rock and realise that the salvation of South Africa lay in work. Mr. Hofmeyr then spoke of the position of South Africa in the world to-day, alluding to the wider conception of her destiny as a part of a community even larger than the British Empire. South African ideals some years ago had been narrow, he proceeded, and then they became widened to the aspect of being a unit of the British Empire; but these ideals were still widening.

The Prime Minister's speech in reply is dealt with in our leading columns.

Dr. A. J. Orenstein proposed the toast of "Our Guests and Kindred Societies." He referred to the interest of the Prime Minister and his colleagues in scientific development in South Africa. There was in South Africa, he said, one of the best research laboratories in the world: that for veterinary research at Onderstepoort. South Africans seemed the only ones to ignore its value; foreign Governments had sent scientific men across the seas to profit by its example.

Bending the Back.

Colonel Sir W. Dalrymple replied. He observed that the Prime Minister had told them he was not going to speak, and he had spoken for twenty minutes; he supposed that must be a custom with Prime Ministers. (Laughter.) He (the speaker) did not want to make a speech, but he felt it necessary to mention the climate—our one asset that no politician could spoil for us. (Laughter.) Another asset we had, he continued, was potential work. The late Mr. Sammy Marks had said that this country would go ahead if the white man would learn to bend his back. The native labour was to-day undermining white labour, and we must all learn to bend our backs.

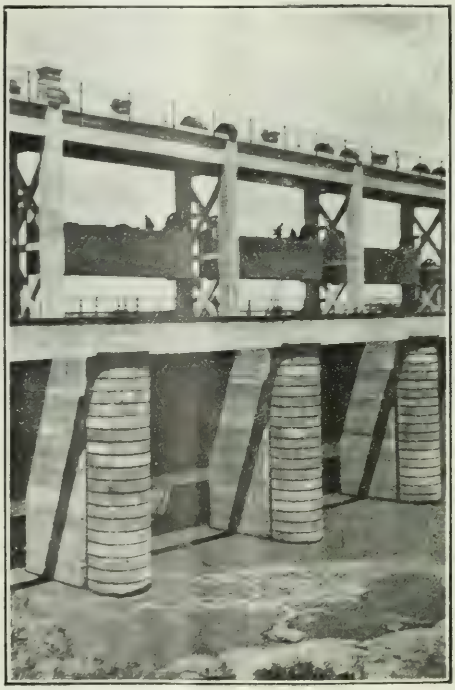
Mr. Elsdon Dew expressed, on behalf of the guests, their enjoyment of the evening.

Mr. W. A. Martin proposed the toasts of "The Chairman and the Secretary of the Society," which were carried by acclamation.

Glynn's Lydenburg.

The following cable was sent to London on 21st July, 1923:—"In consequence of heavy expenditure on shaft sinking and necessity for conserving funds for development purposes, Board of Directors have decided to pass dividend per 31st July, 1923. For publication."

THE VAAL RIVER BARRAGE.



A nearer view of the concrete piers.

Gold Mining in Southern Rhodesia.

AN ENCOURAGING OUTLOOK—PROSPECTORS BUSY—THE SHERWOOD STAR AND THE LEGION—SIR ABE BAILEY'S LUCK—GOOD EXTRACTION AT THE SABIWA—CAM AND MOTOR TO INSTAL NISSEN STAMPS—MESSRS. JOHNSON & FLETCHER SECURE IMPORTANT ORDERS.

(By Our Special Commissioner.)

Not since the boomlet of 1909-10 have there been so many genuine prospectors out on the Rhodesian veld and bush as at the present. At no time since those two years of remark have the larger mining corporations of the country been so busily engaged on the preliminary exploitation of new prospects of an attractive nature. Naturally enough, there are a considerable number of blanks for each real prize drawn. And it would, too, be unwise at the present early juncture to predict anything of a particularly definite nature as to the future of a few embryonic ventures of which much is heard in "Charterland" at the present.

It can, however, be stated that already two at least of the new gold mining ventures appear to possess distinct prospects of developing into propositions of importance at no far distant date. These are the Sherwood Star, close to the Sebakwe River, and the Legion Mine, in the Gwanda District, which is situated between 20 and 30 miles from the old Antelope Mine of disappointing memory.

* * * * * *

In a sense neither of these properties is really "new." Each of them has to some extent been opened up in the past. But it would appear that in both instances the most profitable gold bearer had not been worked by its former owners, and that only recently, under the aegis of the big corporations, have the real potentialities of these two Matabeleland properties been sensed.

The Sherwood Star, as is generally known, is being floated under the auspices of the London and Rhodesian Company, in which Sir Abe Bailey is largely interested. The London and Rhodesian Company sponsors the Cam and Motor and the Rezende—two Mashonaland properties which have made good after very chequered careers. Under the direction of the Lonrho Company a reef of very substantial width and carrying good values has been located at the Sherwood Star property, which is situated at no great distance from the Globe and Phoenix Mine. The length of the Star ore shoot is also satisfactory, so satisfactory, in fact, that the opening up of a mine of more than average Rhodesian size is anticipated.

Equipment is now on order for this property, and it is hoped to commence productive operations in the not far distant future.

The Legion Mine is being exploited by the Gold Fields Rhodesian Development Company. Here, too, the reef widths and values are of a decidedly encouraging nature and a feature of this property is the extent and depth of the ancient workings. The mine has recently been inspected by Messrs. Wallace and Hind, of the Gold Fields Rhodesian staff.

* * * * * *

Sir Abe Bailey's luck has most decidedly been "in" with regard to Rhodesia during recent years and both he and Mr. Digby Burnett, the consulting engineer for his interests "up North," are to be congratulated on the wonderful improvement in the fortunes of the Cam and Motor, the recent satisfactory career of the Rezende, and now on the bright promise of the Sherwood Star.

Yet another property under Lonrho auspices, which has in the past proved a disappointment and is now giving distinct cause for optimism, is the Sabiwa. This property recently commenced the treatment of a decidedly refractory ore, but, with a new metallurgical process, it is understood that a very substantial percentage of extraction is being obtained; it is said to be in the neighbourhood of 80.

A METALLURGICAL PROBLEM SOLVED.

View of portion of the New Treatment Plant of the Cam and Motor.

* * * * * *

The well-known pioneer mining machinery house of Southern Rhodesia, Messrs. Johnson and Fletcher, Ltd., are playing an important part in the development of this new and encouraging outlook for gold mining in Rhodesia. The firm is supplying gas engines, each of over 200 h.p. capacity, to both the Sabiwa and Sherwood Star Mines. "J. and F." are also engaged on the delivery and erection of the first 16 Nissen stamps of the Cam and Motor's new 40 Nissen stamp mill, by means of which the premier producer of the Hartley-Gatooma District should be able to materially increase its output in the course of the next year or two.

South-West Diamonds.

The secretaries report the output for the month of June as follows:—Cubic metres treated [illegible] 235: number of stones, 902: carats won, 176.

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South Africa and the Petroleum Problem.—III.

THE CRETACEOUS BEDS OF THE SOUTH AFRICAN LITTORAL—STRUCTURAL CONDITIONS IN PORTUGUESE EAST—THE OIL INDICATIONS OF INHAMBANE.

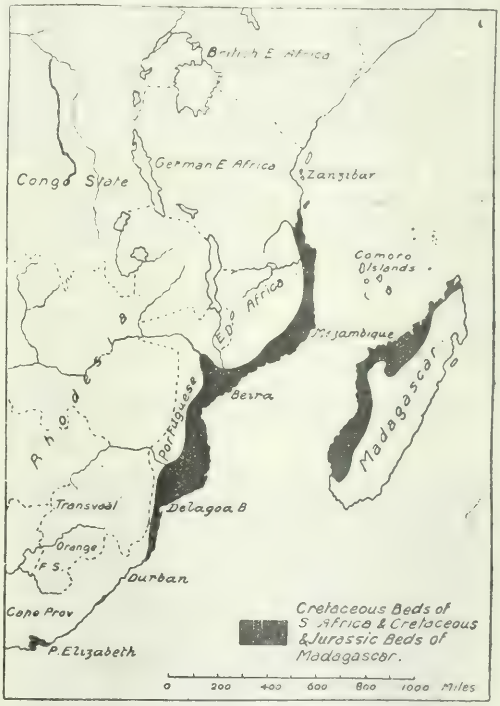
Although the Cretaceous system has not been largely developed, apparently, in the Union of South Africa, it occupies a vast extent of country in Portuguese East Africa. Whereas the greatest distance across the beds of this system at their widest part, in Zululand, from the sea to the foot of the Lebombo mountains, is not much more than about 50 miles, the area continues to expand northwards until it reaches a width of about 200 miles in the district of Inhambane. Still going northwards, towards the Sabi River and through Sofala, Beira, and the districts beyond them, the system is found to cover many thousands of square miles of low-lying coast land, stretching from the highlands to the sea. Where the upper Cretaceous rocks have invaded the land to so large an extent it is not at all improbable that a fairly representative section of the whole system may be proved to exist somewhere between the western margin of the beds and the sea, in the same way that marine sediments, ranging from the upper Cretaceous to middle Tertiary, none of which seem to have been found in the Union, are known to exist in the Sheringoma plateau between Beira and the lower Zambesi.

Three Necessary Requirements.

In the search for petroleum, as Mr. Cunningham Craig has pointed out in his report on the "Petroleum Prospects of the Union of South Africa, there are three points to be considered, viz.:—(1) The presence of sufficient carbonaceous material from which oil can be formed; (2) the conditions of deposition; and (3) the geological structure. "In a locality where these three conditions are favourable," he remarks, "an oil field can be predicted with certainty." These conditions were not found by him to be satisfactorily fulfilled in any part of the Union, but only to a modified degree in the folded belt of the Karroo system along the southern edge of the area occupied by those rocks, as has been already mentioned in a previous article. Strata which presented many favourable characteristics were the Uitenhage beds, or lower Cretaceous series, near Port Elizabeth. The absence of satisfactory structure in the way of anticlines, however, made it a highly speculative undertaking to drill a hole in these beds in order to obtain evidences of petroleum. Borings which have been made in the series have given no definite information. In describing these Uitenhage beds, Mr. Cunningham Craig says that they are "a typical estuarial and littoral series, plant remains and fossil wood being common at some horizons, while thin marine beds with a marine fauna are intercalated with the more characteristic deltaic deposits." The conditions of deposition indicated are very similar to those under which many an important oil-bearing series has been formed in other parts of the world, and the description given by him may be applied in a general way to all the Cretaceous strata along the South-East African littoral. "If oil is to be drilled for, it is as well to look for it as near as possible to areas where the conditions for its formation were favourable," he observes, in his book on "Oil Finding." On the one hand may be littoral and terrestrial beds where the carbonaceous phase is in evidence; on the other, marine beds beyond the confines of the delta. Somewhere between we may hope for an area where the necessary alterations of arenaceous and argillaceous sediment are present, an area not too far from localities where accumulations of vegetable matter have probably been formed, buried, and sealed up. In that area we must seek for favourable structures to concentrate and retain the petroleum." The Cretaceous beds of South Africa exhibit these features of littoral variation very prominently, and whether they are regarded as sources of oil-forming material of any organic kind, or with reference to their capacity to act as porous reservoirs of petroleum, are just such as would meet the specified requirements. As far as the Union is concerned, however, there is no evidence of the existence of petroleum, or its allied compounds, in any of the Cretaceous exposures that have been examined, and this circumstance may largely be attributed, no doubt, to the absence of anticlines, domes, folds or other suitable structures to serve as collecting and retaining traps for any oil that may possibly have been formed. In other words, the horizontal lie of the beds has made them unsuitable for the purpose.

Earth Movements and Geological Structure.

Those who are interested in the study of the earth movements which have occurred at various periods in the geological history of South Africa will find much information upon the subject in a paper on "Post-Jurassic Earth Movements in South Africa," which was contributed to the "Geological Magazine" (London), of December, 1912. The matter is dealt with at some length, also, in a paper contributed to "The Geological Journal" of January, 1915, by Messrs. E. V. Thiele and R. C. Wilson, dealing with the tectonic and physiographic features of Portuguese East Africa between the Zambesi and the Sabi Rivers. From a consideration of all the evidence to hand it is clear that the Cretaceous beds and those lying above them in the geological scale in that part of Africa have been subject to periodic movements of an extensive kind, some of which according to Dr. Thiele, have been fairly recent. In proof of this, he cites the case of the Sheringoma plateau, where there has been a post-Miocene uplift of at least 1,000 feet.



Sketch Map of Cretaceous Areas in South-East Africa.

Vast alternating up and down movements such as those which have been in operation since the Cretaceous system was laid down in these parts cannot have occurred without producing a great deal of structural deformation to a considerable extent. One may at least expect to find many pronounced alterations of dip which would be favourable to the accumulation of oil if such were at any time formed.

Referring to the Inyambane area in Mozambique a distinguished geologist says:— "Owing to the fact that the Tertiary and Cretaceous rocks of the Inyambane area are so closely allied to the strata of the Persian oilfield, it is obvious that the question of the occurrence of oil is one worthy of serious attention," and speaking of Inhambane he remarks: "The mere fact that any oil at all was met with must nevertheless be regarded as of considerable importance. There can be no doubt that the sea in which the Cretaceous and Tertiary rocks of the Anglo-Persian oilfield were laid down was continuous across to Mozambique, and as the rocks are comparable in their general characters and fossil contents, it is only reasonable to infer that they should contain a similar occurrence of oil. Near Inyambane the dip, where it can be ascertained, is usually at low angles to the eastward, but, as already noticed, the overlying limestone hills appear to occur on the low ground both to the west and to the north, which fact indicates the probability of there being a large anticline or dome in the strata and thus lends support to the idea that valuable oil pools may exist beneath." Enough has been said to show that the Portuguese East territory is an area that deserves serious investigation, and a reference may now be made to some of the results obtained in the Inhambane district in 1917-8.

The Lake Nhangela Borehole.

Space does not permit of a lengthy quotation from the driller's log of the No. 4 borehole which was put down near the edge of the lake, but the following notes will be of interest. The depths are to the nearest foot.

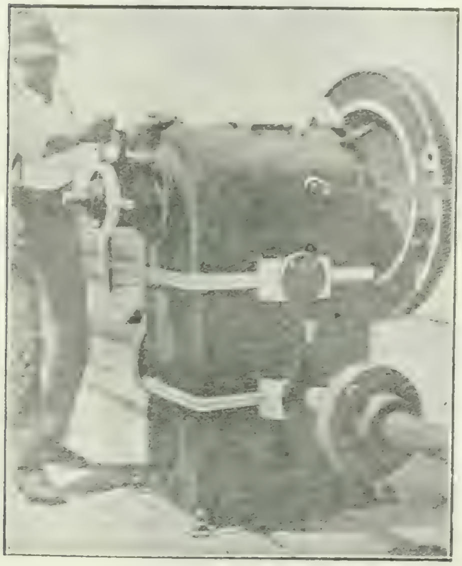
Depth in feet.	Remarks.
180	Fine light grey sand, little clay and traces of oil.
197	Formation sand with small seams yellow clay showing oil on pumping.
278	Formation at 274 feet changed from dark brown sand to a light pepper colour sand and water. This way for about 4 feet then a change of dark brown fine sand and clay showing oil freely on pumping to surface (water in formation).
286	Sandy clay, dark brown, showing oil freely on pumping to surface.
301	Do. do.
350	Change from coarse gravel to brown mud and fine sand. Oil showing freely on pumping.
370	Very strong smell of gas all day; oil showing freely.
374	Passed through seam about five inches thick of oily cake.
428	Pumpings show plenty of oil, and strong smell of gas coming from hole all day.
560	Blue clay and fossils, bitumen in seams.
568	Blasted here and a plug of solidified petroleum filled up the casing to 188 feet.
853	Struck oil sand again.

The hole was abandoned at about 872 feet owing to an accident to the tools which became jammed at the bottom of the borehole and could not be extricated. The notes quoted above are merely brief extracts from the log which give the salient points of the record. Much reference is made in the log book to bitumen which was similar on drying and exposure to that which is found in many places on the surface. The writer paid a visit to Lake Nhangela just before the last war and sent samples of this bitumen to England for analysis. The results were equivalent to 102·21 gallons of crude oil per ton of 2,000 lbs. of the material. The coke residue amounted to about 22 per cent. of the original product and this crude oil on distillation yielded as follows:—

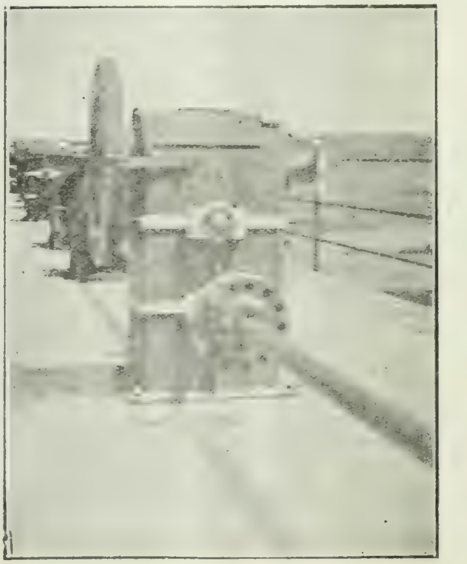
	Gallons
Naphtha	3·48
Burning oil	20·44
Intermediate oil	13·27
Lubricating oil	18·89
Hard scale	4·25
Soft scale	2·12

It is regrettable that want of funds put an end to the drilling operations referred to.

THE GREAT VAAL RIVER BARRAGE.



Operating Gear for Sluice Gates on Top Platform.



Another View of the Operating Gear.

Mining Men and Matters.

Sir Thomas Cullinan is visiting Rhodesia.

* * *

Mr. H. S. Harger is reporting on a property in the Robertson district.

* * *

Mr. J. J. Wessels, of the Afrikander, has been on a brief visit to the Rand.

* * *

Mr. H. Stuart Martin was entertained at a farewell banquet on Wednesday evening.

* * *

The Minister of Mines and Industries is visiting the Rand this week and was present yesterday, at the opening of the Vaal River Scheme.

* * *

Dr A. L. Hall, Assistant Director of the Geological Survey, is investigating the corundum deposits of South Africa.

* * *

Mr. J. H. Veasy, who has completed much valuable research work on behalf of the Chamber of Mines and the industry in general, is one of those affected by the recently announced reorganisation.

* * *

Mr. E. Bruce Ball, managing director of Glenfield and Kennedy, Kilmarnock, Scotland, the engineering firm which manufactured the 36 huge sluice gates for the Vaal River Barrage, attended the opening ceremony on Friday.

* * *

Mr. P. V. Emrys Evans, eldest son of Mr. J. Emrys Evans, C.M.G., who has been appointed special representative of Messrs. Vickers, Ltd., South Africa, in association with Messrs. Dowson and Dobson, has arrived in Johannesburg.

Latest Metal Quotations: London, July 23.

Standard copper, £65 12s. 6d. cash, £66 7s. 6d. three months; electrolytic copper, £72 15s. sellers, £73 buyers; copper wire bars, £73; standard tin, £186 12s. 6d. cash, £187 15s. three months; foreign lead, £24 10s. prompt, £24 2s. 6d. forward; quicksilver, £10 5s.; bar silver, 31½d.; bar gold, 90s. 8d. per ounce.

* * *

Southern Cross Diamonds.

Favourable reports have been made on a deposit of kimberlite in the Robertsen-Swellendam district of the Cape Province, and tests are now being made under expert supervision. The indications are said to be excellent, and while it is too early to make any definite statements, there is reason to hope that a true diamondiferous pipe may be discovered.

* * *

Cementation Process at the Coronation.

The London secretary of the Coronation Syndicate reports receipt of a cable from head office notifying that the new shaft at Luipaardsvlei No. 10 has been sunk to a depth of 105 ft., of which 94 ft. have been timbered and concreted: "The test borehole put down at the bottom of the shaft proves that the extent of the soft strata is only 44 ft. thick, and the borehole then entered solid dolomite. Tests also prove that the soft section can be successfully sunk through by using the cementation process, which work is now in progress, and on completion rapid sinking can be resumed under normal conditions."

* * *

Lomah (Rhodesia) Exploration, Ltd.

Shareholders in this company have received some very interesting information respecting the Cactus gold mining claims in the Gwelo district, in which the company is interested. In a circular letter dated June 8, signed by Mr. F. A. Lancaster (secretary), it is stated that the principal shaft has been sunk to the No. 2 level (238 ft. from surface), and cabled news is expected of developments at that level. The No. 1 level has so far disclosed ore about 290 ft. in length. Additional working capital has been secured to conduct development by the subscription of part of the unissued shares of the company at a net price of 2s. 6d. per share, which have been placed under option, with the right to the option holders to purchase an additional 40,000 new shares at the net price of 3s. 9d. per share, such new capital to be created with the approval of the shareholders, if and when such option is exercised. The area of the property, which is three miles from the railway and nine miles south of Globe and Phoenix and Gaika mines, is 200 acres, and the further information given shows that there exist all the accessories for economical working, whilst the geological features are described as favourable for permanence of lodes in depth. Of these lodes, seven have already been worked to varying depths, and have proved the existence of an extensive lode formation. Full details are given, in tabulated form, of the results achieved. The output so far has been 13,648 tons of ore yielding £19,732 for gold and silver (the value being 29s. per ton. A yield of 25s. per ton standard value for gold is estimated by Mr. H. Cartwright, A.R.S.M., A.I.M.M., to show a monthly profit on a 10-stamp mill basis and a crushing of 1,300 tons per month. It is proposed to erect a 10-stamp mill and suction gas plant, and to utilise profits in driving three or four levels. Should developments prove satisfactory, the mine will be worked on a scale commensurate with its importance. The probable tonnage above the first level is given at over 7,000, and there have been treated about 3,000 tons of sands and slimes of a value of 1·7 dwts., and 500 tons of an average of 2·7 dwts. remain to be dealt with. The mine is now equipped to open up two or three levels. The management will be in the hands of Mr. Cartwright, who has had 25 years' experience in Rhodesia, and who has great confidence in the future of the property.

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TOPICS OF THE WEEK.

The Great Vaal River Scheme.

The event of the week has, of course, been the official opening of the great Vaal River Scheme of the Rand Water Board by H.R.H. Prince Arthur of Connaught. A representative selection of pictures reflecting this great engineering work, and the *personnel* of those responsible for it appears elsewhere in our pages, and the articles that have been printed in this and the past issues of this journal and in the dailies have familiarised the public with the main features of the scheme. The Great Barrage is, of course, the most spectacular factor of the whole, and as the pictures indicate, it dominates the surrounding landscape as an enduring monument to man's triumph over Nature. We are not going to attempt to emulate the eloquence evoked by the great inaugural event of yesterday. The plain recital of the figures reflecting the magnitude of the work is eloquent enough. Those figures are fully set out elsewhere in this issue. But we do think that this great engineering enterprise, by its broadness of conception, brilliance of execution and admirable finish, possesses a significance peculiarly its own. At once it represents a triumph of science, of energy—which spells work—and of hope—which means confidence in the future. Its Royal inauguration yesterday, therefore, we trust, marks the beginning of another era of progress and prosperity for the Rand and for all South Africa.

The Conciliation Board's Reports.

As anticipated in these columns, a Majority Report, signed by Mr. Young and Professor Lawn, and a Minority Report, signed by Mr. MacFie, have been presented by the Conciliation Board which recently investigated the demand of the mine mechanics for an increase of 30 per cent. in wages. The Majority Report, of course, has little difficulty of disposing of the arguments in favour of an increase, and the framers make out a closely reasoned case for their decision, which we hope to reprint next week. Mr. MacFie's Minority Report, as was expected, has much to say for some increase in wages. He mentions a figure of not less than 12½ per cent., but he also advises the white workers on the mines that an ample supply of cheap native labour (imported if necessary) is in their best own interests. This of course, is at once a tribute to Mr. MacFie's common sense and honesty of purpose, and a real triumph for those of us who, in season and out, have been trying to show the necessity for the adoption of the unpopular course of increasing the supply of native labour from Portuguese East Africa. Mr. MacFie's views on native labour are stated with great clearness and succinctness. We cannot quote all of them this week, but the following passage gives the tone of the whole. "If," he says, "the mines were to return to the policy on which the Rand was worked for many years and which experience has proved to be sound—viz., (1) the restriction of the native to unskilled manual work; (2) the maintenance of a reasonable ratio between Europeans and natives; (3) the reservation to Europeans of certain occupations; and (4) the strict repatriation of all imported indentured natives; then, it seems to me, firstly that the interests of the mines would be identical with the interests not only of mine employees but of the whole white community on the Rand; and, secondly, that it would be well worth the while of the mines to secure the support of their European employees on those questions. As the Mining Industry Board said, 'the mining industry in the Transvaal is built upon the basis of cheap native labour for unskilled work.' If European workmen on the mines refuse to support that policy they will be cutting their own throats, because good wages to European workers on the Witwatersrand for skilled or supervision work and reasonable wages for semi-skilled work at which a man can learn to become a skilled miner have been possible only because the rough unskilled work has been done by imported indentured native labour, on the principle stated by the Mining Industry Board report of the greatest possible production at the lowest possible cost; and it is obviously immaterial whether that native labour comes from across a degree of latitude or, as in the past, a degree of longitude." Seldom have we seen the whole matter better put, and, if as it is rumoured, the Government has consented, to remove the embargo on the further necessary supplies from P.E.A., this unbiassed judgment by Mr. MacFie may doubtless be credited with contributing to that desired consummation.

The Prime Minister at the "Chemillurgical" Banquet.

Although the Prime Minister began by disclaiming any intention of making a speech at the banquet of what Dr. Orenstein called the "Chemillurgical" Society, last Saturday night, he managed to make his views pretty clear on a number of important questions. Unfortunately, from the purely mining point of view, though General Smuts was sympathetic towards the industry and ridiculed those who are always ready to jibe at it, he showed himself still unconverted to the need for increasing by all reasonable means the native labour supply. It is true that he blames the farmers as well as other industrialists for being as bad as the mining industry in crying out for native labour, but it remains, nevertheless, a little disheartening to find the Prime Minister's mind apparently as firmly set as ever against the advice of practically all the unbiassed and independent commissions he himself has appointed to consider this vital subject. That is our brief reading of the Prime Minister's discourse last Saturday night. Some of his remarks on that occasion may be put on record, not because they reflect any new view of the Prime Minister's, but rather because behind their studied moderation and sweet reasonableness they hint of an unshakeable resolve to resist what seem to us the perfectly legitimate and even vital, needs of the industry. Fortunately for the mines and South Africa, there are signs since the foregoing was written, that the Government is coming round to the views of all sensible mining men on the subject of labour, and may consent to allow more natives to be recruited from Portuguese East Africa. "There is an increasing call for labour," said the Prime Minister, "—not for white labour, but for black labour. If it is really our object to build up a nation here in South Africa; if we intend to build up something stable, to build up a permanent European civilisation in this country, then we must not—you especially, you who are the great builders in this country—you must not overlook this aspect." Continuing, the Prime Minister said that there was the great Rhodesian civilisation, of which the monuments were far greater than the Union monuments we had erected. But what had become of it all? Nothing had happened. It had all gone. We aimed at something much greater here in South Africa, and if we wanted to make a real success of South Africa, if we wanted to fulfil our task and build up a European civilisation, we would have to continue to look more closely at the white foundations on which we were building our civilisation. "Do not let us continue to cry as we are doing," said General Smuts, "for more and more black labour. You are not the only sinners. It is not only the mining industry that is ever crying out for more and more black labour. Every other industry is doing the same. The young industries of the Union are also starting very much on a black basis. Farming is, apparently, more and more switching off from the white basis on to a black basis, and we see in Johannesburg thousands and thousands of people who are employed in agriculture, and who are tempted to this centre as poor whites. It is not only the mines and the mining industry that are the sinners. Every other industry is involved in the same measure of blame and responsibility. On an occasion like this, when I see before me many responsible people in this great industrial centre, men who are carrying the burden of the great mining industry, I would impress on your consciences, and on the consciences of South Africa, the enormous responsibility of the task that rests on us all—not only on the gold mining industry, but on every mining industry, and wherever possible we should stimulate white employment, and give a helping hand." General Smuts went on to say that we might have our strikes and troubles. White labour was not so amenable to discipline as black labour, but he sincerely hoped that in the industrial development of South Africa which was taking place, they must keep steadily in view not only the purely economic and industrial aspect, but also that larger aspect of nation-building, and lay down a permanent and stable white civilisation, which was the only real object of our civilisation. All this, of course, is a high and worthy ideal. It is the ideal of the *Rand Daily Mail* and of Mr. Patrick Duncan. But is it practical economics? Can it be realised without sacrificing to the shadow of the ideal the substance of the present measure of industrial prosperity? These are the questions that practical men ask, and practical men like Colonel Sir Wm. Dalrymple put them very candidly to the Prime Minister on Saturday night. Very gently and in his wonted genial fashion, Sir William likened the Prime Minister's view to the counsels of perfection one listens to with extreme appreciation in church on Sunday, but lamentably fails to live up to on Monday. In this imperfect world it simply can't be done, or, more bluntly still, with the best will in the world, the industry cannot thrive and expand on the Prime Minister's fine words alone.

* * *

The Prime Minister's Tribute to the Rand.

Just as mankind does not value health till it comes to know illness, South Africa did not appreciate the Rand's importance till the *malaise* of last year. That was the moral of a passage in the Prime Minister's speech last Saturday night, which met with unanimous approval. "I think nothing has more opened the eyes of South Africans—the people all over South Africa, of all other industries—to the fact that the mining industry still occupies the key position in South Africa. No sooner was there a strike here than everybody felt it—the farmer, every industry over the whole of South Africa. If for no other reason than that, I think these awful events through which we passed 15 months or more ago might prove a blessing in disguise to this country." They had proved advantageous from other points of view also, General Smuts went on. There was no doubt something was needed to clear the air in the Witwatersrand, as Principal Hofmeyr had suggested. We were living on a basis, on a scale which neither the circumstances nor the prospects of that industry or of South Africa justified. "The wrench had to come," the speaker proceeded. "The change had to come, but it came as changes generally come in South Africa—as a cataclysm. The result, however, has been all right. The mining industry which you have built up—of which you are the real pillars—that industry is to-day in many ways on a sounder footing than for many long years."

Optimism in High Places.

One feature of the Prime Minister's speech merits emphasis in these days of doubt and hesitation. This was his reference to the bright future of the Rand and its great industry. "Five years hence or ten years hence," said the Prime Minister, amid applause, "this industry will still be one of the finest and greatest industries in the country." He went on to enlarge on the potentialities which lay behind the recent action of Parliament in denoting its industrial policy in other directions throughout the country. General Smuts also ridiculed what he called the pessimism of the Press. "I am an optimist," he declared, "and my optimism has always been justified. South Africa has proved optimism to be the true thing for the people of this country. We have always emerged from all our disasters stronger than we were before, and I think that we are justified in being optimistic."

Mining Lessons from Australia.

We have recently printed much evidence of the decline of gold mining in Australia, due to Government and Labour hostility; and now we have striking corroborative testimony of the same nature from the Broken Hill group of mines. These companies constitute some of the most important industrial ventures on the Australian continent. Before the war they were prosperous, but of recent years they have gone through an extremely difficult period, and have been involved in enormously heavy losses, principally resulting from excessive costs of production, chiefly caused by high wages and short working time and by strike after strike. One of these strikes lasted for over a year and resulted in the overwhelming defeat of the men who also suffered enormous hardships and losses during the prolonged struggle. At last a settlement was effected, but the mines and steel works have not been able to regain their pre-war prosperity. This has, in some degree, been due to low metal prices; but the chief contributory causes have unquestionably been the industrial disturbances, inordinately high wages and short working time. One of the mines of the group, the Broken Hill Block 10, Limited, recently issued its half-yearly report, and, in announcing a substantial loss, states that "unless lead prices quickly improve the mine may again be compelled to shut down." This property was inoperative for a long period recently, in consequence of labour troubles, and had the labour situation been more satisfactory the company would, no doubt, be able to see its way to continuing operations, despite the comparatively low prices obtained for its production. The whole history of the Broken Hill group of companies during recent years forms a striking indictment of labour methods, for the net result of all these strikes, and disorganisation of work, has been that, what was formerly one of the most prosperous portions of the Australian Continent, has been plunged into comparative poverty.

A Diamond Cutting Industry?

The discussion on the feasibility of starting a diamond cutting industry in this country is as old as the diamond mining industry itself, and our own pages in the past have contained lengthy arguments, giving the pros and cons of the controversy. The present Union Government has made exhaustive inquiries into the matter, and some years ago sent a Special Commissioner to Europe, who reported unfavourably. And now from Kimberley, of all places, and from the cautious columns of the *Diamond Fields Advertiser*, we learn that there is more than a likelihood of the industry being established there on ambitious lines. Our Kimberley contemporary says: "It is no secret that certain continental interests are at work in Kimberley and with the Government with a view to securing concessions which have hitherto been strenuously denied other petitioners. We are led to believe that considerable progress has been made in the direction not only of securing the support of the Government, but also of the Municipality, and that it is only a question of settling certain details before the whole scheme will be ripe for making public. It is freely stated that the factory will commence with at least thirty cutters, and that in three years this number will have increased to three hundred, so that it will easily be seen that the proposition is framed on ambitious lines."

Advantages of Publicity.

Hardly a day passes without the attention of British investors being drawn to the possibilities of Canada as an avenue for their capital. The publicity campaign has been so intense in fact, that British speculators are literally tumbling over themselves in their anxiety to interest themselves in the Dominion. The *Mining World and Engineering Record* mentions that shrewd people in New York long ago grasped the fact that the Dominion offered unique opportunities from the mining point of view, and it is largely due to American capital that development work there has gone ahead in recent years, and several of the mines have been brought to a successful stage. But the position to-day is very different from what it was a year or two ago. Some of the big mining houses in London have had their engineers on the spot, and they have come back impressed with the fact that those who have been securing properties in Canada have had good reason for their confidence. The result is that British capital is now being attracted. To us in South Africa, of course, this merely raises the question, when will more British capital be attracted to our mining development"

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

* * *

C.M. and M. Society.

The Chemical, Mining and Metallurgical Society is visiting the Royal Mint, Pretoria, next Tuesday, also the works of the Cotton and Tobacco Exporting Company, Ltd., Pretoria.

New Platinum Venture.

We understand that a new platinum venture is about to be launched. Inquiries made of the Chairman have elicited the fact that the public will be fully informed of the discovery in due course, but things are not quite ready yet.

* * *

### Mint Not Closed.

An Australian correspondent writes: "A Press notification that the New South Wales branch of the Royal Mint will be closed as from 1st January is premature. The proposal is under consideration by the Treasury. The reason of the change seems to be the reduced Australian gold output, which has caused a loss in the working of the Mint."

* * *

The Standard Bank's Year.

The report of the Standard Bank of South Africa for the financial year ended on March 31 shows profits and an undivided balance of £560,000, leaving, after deductions, £374,000. The directors recommend the allocation of £100,000 to the officers' pensions fund, and a dividend of 7s a share, making a total distribution for the year at the rate of 14 per cent. This leaves a balance of £118,000 to be carried forward.

* * *

Sir Abe Bailey and the Barberton District.

A company called the De Kaap Mining Syndicate, Ltd., has been registered, with limited liability, to prospect and develop mining properties in the Barberton district. The capital of the company is £25,000 in 25,000 shares of £1 each, the first directors being Sir Julius Jeppe, chairman, Messrs. Dundas Simpson, W. J. Gau and Edward C. Dicey, managing director. The South African Townships Mining and Finance Corporation, Ltd., are the secretaries in Johannesburg, with Mr. F. Hemingway local secretary, and Mr. E. D. Richardson manager. The first venture to be undertaken is the Union property on Moodies, where enormously rich ore was found in the early days of Barberton. The reef was cut off by an intrusive dyke and the new company is putting in a low level in an endeavour to intersect the reef below the dyke.

* * *

The Pretoria Loan.

The Pretoria Municipal 5 per cent. loan of £400,000, issued at 99 per cent., is being well taken up. This loan is part of £750,000 issue, to be spent on the following: Electric light and power extensions, £400,000; tramway extensions, £50,000; extensions of sewerage scheme, £135,000; fire sub-stations and public halls, £15,000; market square buildings and sheds, £10,000; extension of municipal offices, £6,000; development of Fountains Valley, parks, etc., £10,000; storage rooms for Indian fruit merchants and hawkers, £1,200; water supply reservoirs, extensions of mains, etc., £90,800; storm water drainage, eastern suburbs, £17,000; native locations, £15,000; total, £750,000. Temporary advances which have been made by the Council out of reserves, for the purpose of starting some of the foregoing works, will be repaid out of the proceeds of the loan.

* * *

Middlevlei Estate.

The Middlevlei Estate Company continues to mark time. The report to be presented at the annual meeting next Tuesday shows cash on deposit at June 30 £12,500. It mentions that the negotiations in connection with the lease of the manganese rights on the farm belonging to the company have fallen through. Another interesting paragraph in the report says: "The boring by the Coronation Syndicate, Ltd., referred to in our last report, was successful in locating both the Randfontein Leader and the West Reef, which showed good values over a stoping width. A shaft has been started and at 23rd June, 1923, was down 105 feet. This shaft is expected to intersect the reef towards the end of 1923. While the above results are of considerable interest, it is as yet too early to draw any definite deduction as to how they will ultimately affect the value of your Company's mining rights."

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INDUSTRIES SECTION.

Do we make the most of our Coal?

SOUTH AFRICA COULD PRODUCE ITS OWN TAR AND ASPHALTE—GAS FOR HEAT AND POWER—COKE NEEDED FOR DEVELOPING STEEL INDUSTRY—DISTILLATION OF OIL AND EXPLOSIVES

Modern scientific research and engineering developments have demonstrated that coal can be much more profitably used than in the wasteful domestic stove, or even in the much more economical generating of power by means of the coal-fired boiler and steam engine. Despite the remarkable advances made in electrical engineering, and the unquestioned supremacy of electricity as an illuminant, coal-gas can still challenge its younger rival in the field of heating, and under certain conditions as a power-producer. Moreover, in the rendering of these extremely useful services, coal incidentally yields a surprising number and variety of valuable by-products. Coal distillation, in fact, is still comparatively in its infancy, and its recent development is one of the romances of industrial and scientific research, into the technicalities of which it is not the writer's province to explore.

It may, however, be worth considering it South Africa, with its enormous coal resources, has taken due account of the great possibilities of exploiting this wealth from the point of view of the by-products obtainable. Many British collieries find it well worth while consuming a large proportion of the coal they produce mainly for the extraction of these valuable by-products—coke, tar, oil and distillates from which explosives, fertilisers, dyes, etc., are derived. The gas is frequently supplied to the towns for lighting purposes or utilised in power plants.

Gas Power as a Stand-by.

Gas works are a comparative rarity in South Africa, although in many areas coal can be obtained very much cheaper than the price at which British gas undertakings can be supplied. One can even be resident in Johannesburg for many months without discovering any evidence of the existence of a gas works. Recent experiences in connection with the electricity supply undertaking must, however, have emphasised the enormous advantage this alternative supply of heat, power and light could prove in such emergencies.

But, quite apart from the convenience to the domestic or even the industrial user, of a gas supply, its value as a national or commercial asset can easily be demonstrated. The Union, for instance, imported tar last year to a total of nearly $7\frac{1}{2}$ million lbs., valued at £30,000; the previous year the imported tar, amounting to nearly $5\frac{3}{4}$ million lbs., was valued at just under £40,000; and in 1920, 10 million lbs were brought into the country, to a value of over £70,000. Tar substitutes were imported last year to the value of over £10,500, and the previous year about half that amount, while in 1920 the value of these imports exceeded £21,000. Asphalte and bitumen imported last year was valued at over £20,000.

The Natal Ammonium Company was the first colliery to produce by-products. Practically the whole output of this concern was used for the production of ammonium sulphate. In 1921—although operations were suspended in April of that year—918 tons of ammonium sulphate were produced, which realised £19,470. The Dundee Coal Company in 1920 proceeded to erect a by-products plant at Waschbank; the scheme provided for the erection of thirty Koppers ovens, with ultimate extension to fifty ovens. Initially, it was intended to manufacture only ammonium sulphate and tar, but eventually a benzol plant may be added. The South African Carbide and By-Products Co., Ltd., was also, in 1920, proceeding with the erection of a carbide and sulphate of ammonium manufacturing plant at the Ballengeich Colliery, Natal.

S.A. Tar and Coke.

The Witbank Colliery commenced, a couple of years ago, to make a strong bid for the South African market for tar, and in that year produced over 84,000 gallons, of which 46,000 gallons were sold to a value of £5,100. Here also, however, the strike was responsible for the stoppage of the by-products plant.

Prior to the war some coke was imported, but since the war all the coke used in South Africa has been manufactured locally, though the strike last year dislocated this industry and possibly accounted for the fact that a little over one thousand tons of coke were brought from the United Kingdom, to the value of £1,800. In 1921 the output of coke in the Transvaal was 139 tons, valued at £457, and in Natal it was 24,515 tons, valued at £50,723. The Natal coke is of excellent quality, especially for foundry work, being very dense and hard. Analysis of a Natal coke (the Vryheid Coke Company) taken over a period of two years gave the following results: Fixed carbon, from 88·60 per cent. to 89·40 per cent.; ash, from 10·4 per cent. to 9·80 per cent.; sulphur, from 0·60 per cent. to 0·50 per cent.; calorific power, 13·12 per cent.

An Unexplored Field.

From these figures it will be seen that in a few isolated instances some attempt has been made to develop the "by-products" side of the coal industry; but these efforts, commendable as they may be, scarcely scratch the surface of the field available. With the enormous development of road transport, a cheap motor spirit is needed for the propulsion of the vehicle and tar, in practically incalculable quantities, for the making of roads adequate to that traffic. The extension of the steel industry in South Africa will call for immense supplies of foundry coke, which, as shown in a previous paragraph, can be made of the highest quality from the Natal coals. There is also a ready market for all the fertilisers, and explosives that South Africa can produce, and there would certainly be no difficulty in disposing of the dyes and other valuable products that are yielded by coal distillation processes. It was shown in these columns a few weeks ago that the National Wool Industries factory recently established at Harrismith has had to import from Germany a supply of dyes sufficient to last for a couple of years.

More About Torbanite: Encouraging Progress of Negotiations in Great Britain: Arranging for Producing Plant.

While the development of South African coal resources from the point of view of the distillation and by-products industry remains more or less in a state of suspense, good progress can be reported in connection with the exploitation of the oil shales, particularly the enormous area of torbanite deposits in the Ermelo district to which reference was made in last week's issue of *The South African Mining and Engineering Journal.*

Mr. G. A. Troye, the mining engineer, who is actively concerned in the investigations and experimental tests in this country, received by this week's mail an encouraging letter from Mr Arthur Stuben, who is associated with [illegible] in this enterprise, and is at present in England conducting the necessary financial negotiations and arranging for a retorting and refining plant to be sent out as soon as possible. In his letter to Mr. Thorne he says that Mr. Cunningham Craig—the well-known petroleum expert—is preparing a geological report, showing the extent and yield of the torbanite deposits, compiled from data supplied by Mr. Thorne. Another expert, Mr. Donald Johnstone, whose firm has been connected with oil shale work since the early days and who act as consultants for a prominent French company, is engaged in preparing estimates of capital cost of units with a throughput of 50 tons per day and 200 tons a day capacity, together with the annual running costs of these plants, from the mine to the finished products in the [illegible].

"Incidentally," writes Mr. Struben, "Johnstone informs me that, as the result of assays made of our material, the retorting and refining can be successfully carried out on a commercial scale and that our products will be of high quality."

Financial Aspect.

Meantime, Major [illegible] [illegible], who was director of chemical research during the war, is preparing details of the cost of distribution from the refinery to the consumer, and Mr. Struben is also collecting information showing the cost of oils landed at the ports; so that it will be known just what competition the undertaking will have to meet. Armed with these particulars, Mr. Struben will be in a better position to arrange for the financing of the enterprise.

"I am," he adds, "working with the view of sending out a 50-tons per day unit at the earliest possible date. A great deal will depend upon the result of the bulk test of our thirty tons of torbanite (which is already on its way to England). At this test I propose that representatives of the various interests involved will attend, including the High Commissioner. The Fusion Corporation has undertaken to carry out the test in its 5-ton retort free of charge. This retort has, I believe, been running successfully for over a year, producing 95 gallons from one [illegible] torbanite (one ton), and is of precisely similar construction to the 25 ton units which we should install; the difference is only one of size, the increase in size presenting no difficulties. This retort will produce the crude oil.

"I am definitely informed by Johnstone, Craig and others," concludes Mr. Struben, "that this crude oil is of excellent quality and that its fractioning and refining presents no difficulties whatever, other than those already dealt with in existing refineries dealing with well oil.

"In brief, I think we can rest assured without any misgiving that the processes of extraction of high quality oils from our material has already been satisfactorily solved. It now remains to solve the financial problem, which, as I have indicated, may not be such an easy matter. I am hopeful that with your support, and owing to the high intrinsic value of our property, that we shall also solve this problem, though we must not minimise its difficulties."

Mr. W. Gemmill, the newly-appointed General Manager of the Transvaal Chamber of Mines

Dividends Payable.

The following table shows the recent mining dividends declared or recommended and dates payable where announced. Mining shares according to the London Stock Exchange rules are marked "ex div." on the settlement day immediately following the date of payment of the dividend and are then taken out of the list. South African dividends are usually paid in Europe about six weeks or more after the declaration in South Africa. Shares are of the denomination of £1 unless otherwise stated.

Announced	Company	Div.	Payable.
June 20	Apex Mines (10/)	/3‡	Mid-August.
June 14	Aurora West (10/)	/6‡	Mid-August.
June 15	Brakpan	4/‡	Mid-August.
June 12	Cam and Motor	1/6‡	End July.
June 16	City Deep	4/‡	August 7.
June 16	Crown Mines (10/)	2/9‡	August 7.
June 16	De Beers Pref. (£2 10/)	25/‡	
June 8	Geduld Proprietary	2/3‡	Early August.
June 14	Gold Mines Investment	/6‡	July 12.
June 20	Govt. G. M. Areas	6/‡	August.
June 20	Johannesburg Consolidated	2/6*	End September.
June 8	Knight Central	3/6‖	July 19.
June 20	Langlaagte Estate	2/‡	August.
June 14	Meyer and Charlton	10/‡	Mid-August.
June 16	Modder B. (5/)	2/6‡	August 7.
June 8	Modder Deep (5/)	3/‡	Early August.
June 16	New Modder (10/)	5/‡	August 7.
June 16	Nourse Mines	/9‡	August 7.
June 16	Rand Mines (5/)	3/‡	August 14.
June 14	Rezende	4/‡	End August.
June 12	Robinson Deep "A"	4/‡	August 9.
June 16	Rose Deep	1/3‡	August 7.
June 13	Shamva	1/3‡	July 12.
June 15	Springs Mines	2/6‡	Mid-August.
June 12	Sub-Nigel	/9‡	August 9.
June 20	Van Ryn Deep	5/‡	August.
June 13	Van Ryn Gold	1/6*	July 19.
June 16	Village Deep	1/‡	August 7.
June 28	Wankie Colliery (10/)	/9‡	July 14.
June 22	Witwatersrand Deep	1/6‡	August 27.
June 20	Witwatersrand Gold	3/‡	August.

* Free of Income Tax. ‡ Less Income Tax.
‖ First liquidation distribution.

Letters to the Editor.

CHROME IRON DEPOSITS.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—In your article of the 14th you mention there is quite a demand for chrome. I know of a good deposit on three farms in this district, about 16 miles from the rail. I am a prospector and would be pleased if you could put me in touch with people interested in this line. Thanking you in anticipation,—I am, etc.,

GEO. W. THORNE

P.O. [illegible].
District Lydenburg.
23rd July, 1923

Tati, Tuli and Lobatsi for the Union.

FORMAL APPLICATION FROM THREE SMALL "ENCLAVES" TO JOIN THE UNICN—TATI CONCESSIONS AND THE MINING INDUSTRY.

Three small European "Enclaves," dotted about the Bechuanaland Protectorate, but, in sentiment, at least, not at all attached to the territory, have applied to the Union to take them in. The chief of these is the Tati District, historically associated with the birth of the modern gold industry in the sub-continent, and at present the object of attention from farmers. As the applications for incorporation in the Union have been formally made in each case, the Union Government will, presumably, have to consider the matter, though it is one in which the Imperial authorities have the last word, and the claims of Rhodesia to two of the areas in question—the Tati District and the Tuli Block—are strong. Whatever the upshot of the question, the request to the Union has served to draw attention to these interesting "semi-detached" districts; and we are indebted to the *Bulawayo Chronicle* for the following facts regarding them:

A Little History.

Each of the small territories has a history and an individuality of its own. It was on the Tati that Carl Mauch first saw the gold-bearing quartz in 1866, and it was there that the first mining machinery in South Africa was erected and the first modern shafts sunk. Mauch, guided by Mr. Hartley, with whom he travelled from the latter's home at Magalies, afterwards went on to the Rhodesia goldfields and also had a hand in the discoveries of the Transvaal. By 1868 the locality was the scene of great activity. Sir John Swinburne and Captain Levert, representing the London and Limpopo Mining Company, arrived there with a steam engine and other plant, and subsequently the first two mining batteries to work in Southern Africa was made at Durban—and, it must be added, were not particularly successful. A large party of Australians went up from Durban and various smaller groups made their way from other parts of the country; and though most of these initial ventures failed for want of capital, they resulted in some cases in experience which was useful later on in the Transvaal and Rhodesia.

Tuli and Lobatsi.

The other two "blocks" are much smaller. Tuli, a semi-circular patch, is on the Rhodesian border, about 50 miles north of the Transvaal boundary. It was granted to the Chartered Company many years ago by Khama, of whose territory it formed a part, and has since been regarded as an integral part of Rhodesia. Here was located the little Ababirwa tribe, whose forcible removal by Khama a few years ago caused a sensation. It was in terms of the agreement with the Chartered Company that Khama required the Ababirwa to "trek," the land being required for the purpose of European settlement. The Lobatsi block is the only one of the three that actually adjoins the Union. It is a small tract of good ranching land round Lobatsi station, 50 miles north of Mafeking marching with the western boundary of the Marico district of the Transvaal.

The Tati Concessions.

The Tati territory consists of about 2,500 square miles lying between the Shashi and Ramaquabane rivers which forms its western and eastern boundaries respectively. On the west and north it adjoins Southern Rhodesia and on the west the Bamangwato reserve. The main railway line from the Cape to Bulawayo runs through the centre of the territory. Attention was first drawn to Tati by reports of rich deposits of gold and other minerals and about 1868 a party of prospectors headed by the late Mr. Dan Francis settled in the district and commenced mining for gold with the sanction of Lobengula, the paramount chief of the Matabele. There are many indications throughout the district showing how the "ancients" worked for gold, and Tati has not been without its stories of buried treasure, but the "secret hoard" still evades discovery. In September, 1860, Dan Francis and others obtained a concession of the mining rights of the territory from Lobengula, and these rights were amplified in a further agreement concluded with the chief in September, 1882. In February, 1887, a concession to administer the territory was granted by the chief to the late Mr. Sam Edwards. These concessions were acquired in October, 1888, by the Tati Concession Mining and Exploration Co., Ltd., of which the present Tati Co., Ltd., is the successor in title. When the British Bechuanaland Protectorate was established the Tati territory was included therein. It has been the privilege of the writer to look through a number of interesting old documents filed away in the Tati Company's offices which might well have formed the nucleus of an interesting volume, beginning with the copies of the grants made by Lobengula, who is described as "King of the Amandebele," at Matji Umhlope in 1880 and Bebulawyo (Bulawayo) in 1882 respectively.

The Revival in Mining.

From 1868 to 1892 the production of gold was small and probably did not exceed 2,000 ounces, but during the last 30 years gold of the total value of approximately £500,000 has been recovered in the Tati district. It seems pretty clear that in the early days most of the mining claims pegged were simply being held for speculative purposes and very little actual mining was carried out, with the result that a slump soon followed and thereafter prospectors were inclined to give the district a wide berth. A few of the faithful remained, however, and it was not surprising that men like Marnoch, Andersen and others had the satisfaction of seeing a successful termination to their work and beliefs. The Monarch Mine, situated two miles north of Francistown, is reckoned to be the oldest gold-mining proposition in South Africa, and is considered to be quite a good property still, although not working at present. Lack of capital seems to have played an important part in the curtailment of mining operations in this district in days gone past, but this is thought to have been overcome by the formation of the Tati Mines, Limited, a subsidiary company of a powerful Rand group, who commenced operations this year extending over a large area, and it is earnestly hoped that this may prove the turning point in the history of the district as far as mining is concerned. The mining regulations in the territory are practically similar to the existing laws of Southern Rhodesia, where every scope and encouragement are given to the genuine prospector. Up to about 15 years ago the European population was almost entirely occupied in mining and trading with the natives. Though the exceptionally high value of the territory for the raising of cattle was generally recognised, no special steps were taken by the concessionaires to encourage settlement of Europeans on the land. But during recent years the Tati Company has surveyed a considerable portion of the territory into farms and has adopted a progressive policy towards land settlement, with the result that the farming community comprises to-day a large proportion of the European inhabitants.

S.A.R. Orders.

The Union Railway Administration has placed an order for a hundred bogie all-steel covered grain wagons with the Metropolitan Carriage and Wagon Company, Birmingham, while orders for a hundred locomotive boilers have been distributed among the following firms: North British Locomotive Company (Glasgow), R. & W. Hawthorn, Leslie & Company (Newcastle-on-Tyne), and Kitson & Company (Leeds). Fifty high-sided open goods wagons for two feet gauge lines in the South-West Protectorate have also been ordered from the Leeds Forge Company.

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The Week in the Sharemarket.

STEADY BUT DULL—LACK OF LONDON INTEREST—OUTLOOK BRIGHTENING.

Throughout the week the market remained steady [illegible]ness was of a furtive character and latterly the position became stagnant. There have been various factors of interest revealed during the period, which, under normal conditions, would have had a stiffening effect on prices. However no encouragement developed from London, and in the absence of speculative interest prices are inclined to relapse into merely nominal quotations. Corner House shares have been steady and Modders at one time advanced, to be checked by some selling from London. Nourse Mines rose a fraction but lost fire under the influence of the poor development report for the quarter. City Deeps remain steady, but Modder B recorded a little business. Barnato stocks shared in the general dullness except Langlaagte Estates, which have been a lively market, and have advanced. State Mines moved up and down fractionally and New States have been featureless. Randfonteins withstood considerable selling. Of Goldfields stocks, Robinson B improved on public buying for investment. Simmers hardly altered in price. Sub Nigels have been bought. General Mining stocks record no commentable change. Union Corporation stocks have been steady in the case of Geduls, and inclined to weaken in the case of Modder Deeps. In the Anglo American group Brakpans have improved on local buying. Springs are better, and West Springs maintained their old price. Anglo Americans have been a dull market. Diamond shares have not added any brightness to the general market position. Consolidated Diamonds have scarcely altered in price and Crown Diamonds still delay the activity that has been looked forward to for so long. Frank Smiths are merely a nominal market. West Ends have had very few dealings, and the price has not improved. There has been no activity in Industrials. In the investment market most of the Loans have been dealt in. National Banks are the turn harder and Reserve Banks steady, about the last quotation. Robinson Deep Debentures have been wanted, ex interest. Nothing has been done in Rhodesians. From the point of view of general business, the market, which rallied earlier in the week, has again become uninteresting, and the turnover has scarcely increased. The difficulty of dealing is accentuated by the scarcity of stock and the lack of either a confident bull or bear movement. It appears that a brighter view may now be taken of the native labour position. The political situation in Europe, which has for so long cast a shadow in all markets, appears to be improving. While the present dullness is not encouraging for holders of shares, there are many points becoming cumulatively favourable to a better market, with a return to much higher share values.

	Fri. 20th	Sat. 21st.	Mon. 23rd.	Tues. 24th.	Wed. 25th.	Thurs. 26th.
Anglo-Am. Corp.	21 6*	21 3	21 6*	21 9*	22 0	21 [illegible]
Brakpan Mines	55 9*	55 9*	56 0*	55 6*	55 9*	57 [illegible]
Brick and Potteries.		-	4 0*	4 0*	4 0*	4 0*
British South Africa.			13 0*	13 6*		
Bushveld Tins		0 3*	0 3*	0 3*		
City and Suburbans.	3 0†	-	3 0†		3 0†	
City Deeps	48 0*	49 3	49 6	49 3*	50 3	49 [illegible]
Clydesdale Colls.	17 0†	17 0†	17 0†	17 3†	17 3†	17 [illegible]
Con. Diamonds	20 0*	20 0*	20 0*	20 0*	20 3	20 [illegible]
Con. Investments			28 0*	28 0*		
Con. Main Reefs	8 3*	8 3*	8 3*	8 0*	8 6*	8 9
Coronation Colls.			30 0†	29 0†		
Do. Freeholds	0 5*		0 5*	0 5*		
Do. Syndicates		4 6	4 3*	4 3*	4 6*	4 6
Crown Diamonds	6 4	6 8	6 9*	6 8	6 7*	6 9
Crown Mines		47 6	47 3	47 0*	47 6*	47 6*
Daggafontein Mines.	2 0*	2 1*	2 2	2 1*	2 4*	2 [illegible]
Durban Rood. Deeps	15 0		15 0*		15 0	15
East Rand Coals	1 0*	1 0*	1 0*	1 1*	1 1	1 1*
East Rand Deeps	0 7*	0 7*		0 7*	0 7*	0 7
East Rand Minings	-		10 0†			
East Rand Props.	4 10†	4 10†	4 10†		[illegible] 0*	4 [illegible]
Eastern Golds	0 4*	0 4*	0 4*	0 4*		0 4*
Frank Smith Dmds.	3 0*	3 0*	3 1*	3 0*	3 1*	3 [illegible]
Geduld Props	58 [illegible]	58 6	59 3†	59 9*	59 6*	59 3*
Geldenhuis Deeps					4 3	
Glynn's Lydenburgs	15 6*		14 9	14 6*	15 3*	15 6*
Govt. Areas	[illegible]	113 6	112 3†	112 6	112 6*	112 6*
Hume Pipes	7 9*	7 9*	8 [illegible]			8 0*
Lace Props.	7 6*	7 6*	7 6	7 9†		
Langlaagte Est	20 7	20 9	21 0	21 6	22 0	22 0
Leeuwpoort Tins			4 9*	4 6	4 3	4 6
Lydenburg Farms	2 6	2 6	2 6	2 6*		2 6
Meyer and Charlton	62 6*	62 6*	62 6			
Modder B's	22 9	22 6*	22 9*	22 6*	22 6	22 6
Modder Deeps	40 0	40 0	40 0	39 6	39 6	39 9
Modder Easts	5 9	5 8*	5 9	5 7*	6 0	5 10
Natal Navig. Colls	26 3*					
National Banks	122 6	121 3	120 0*	120 0*	122 6	[illegible]
New Eland Dmds	58 3*	58 0*	58 0	58 9*	57 6*	
New Era Cons.	6 8*	6 8*	6 6*	7 0	6 10*	6 10*
New Geduld Deeps		0 6		0 6*	0 7†	0 6*
New Kleinfonteins					4 6*	
New Modders	76 9*	77 0*	77 6	78 0	78 3	78 0
New Primrose	3 6*	3 0*	3 6†	3 6	3 6*	
New State Areas	30 0*	30 3*	30 9*	30 [illegible]	31 3	31 0*
Nigels				[illegible] 0*	6 0*	
Nourse Mines	15 9*	13 9*	15 10	14 0	15 9*	14 1½
Pretoria Cements	36 0*	36 3*	37 3†		36 3*	36 3
Rand Nucleus	1 0*	1 0*	1 0*	1 0*	1 0*	1 3†
Randfontein Centrals	12 0*	12 0†		11 0*	11 0*	11 6
Do. Estates	18 6*	18 7	19 [illegible]	19 [illegible]	19 3	19 0
R[illegible] Diamonds.	1 6*	1 0*	1 0*	1 6*	1 9*	
Roberts Victor	6 6*	7 0†	6 6*	6 6*	7 0†	7 0†
Robinson Deep A	31 6*	31 9*	31 9	31 6*	31 6*	31 6
Robinson Deep B	12 9	12 10½	13 0	13 [illegible]	14 0*	14 0*
Rooibergs	3 3†	3 6	3 0†		2 10*	
Ryan Nigels	4 0†	4 0†	4 0†	4 0*	4 0	4 0†
Sabies			5 6*			
Simmer and Jacks	2 10	2 9*	2 10*	2 9*	2 9	2 9
S.A. Breweries		28 6*	28 6*	29 0*	28 6*	
S.A. Lands	3 0*	3 0*	3 0*	3 0*	3 0*	3 1*
S.A. Reserve Banks	£132½*	£132½*		£132*	£132†	£132†
Springs Mines	14 3	14 3*	14 6	14 9*	15 3*	15 6
Sub Nigels	9 7½*	9 9	9 9*	9 10½	10 0*	10 0*
S.A. Alkali	10 6*	11 0	11 3*	11 0	10 9*	10 6*
S.A. Townships	10 3*	10 3*	10 3*	10 6†	10 3*	10 3
Transvaal G.M. Est		8 3*	8 3*	8 3*	8 6	8 3*
Transvaal Silvers	13 0*	13 6*	13 6*	14 0†	13 9	13 6*
Union 5 per cent	£101*	£101	£101	£100½	£101*	£100½†
Van Dyks	0 11*	0 11	0 11	0 11*	0 11*	0 10*
Van Ryn Deeps	62 9*	62 6	62 3*	63 0	62 6*	62 0*
Van Ryn Estates		12 6	12 0*	12 6*		13 6
Village Deeps	11 0	11 3	11 0*	11 0	11 3*	
West Springs	19 3*	19 3*	19 4*	19 4½	19 6*	19 6*
West Rand Cons.	4 9†					3 9*
Western Rand Est.		2 0†	2 0†	2 0*	2 0*	2 0*
Witbank Colls.	31 6*	31 6*	31 6*	31 6	31 0*	—
Witwatersrands.	12 6*	13 0	12 6	13 3*	13 3*	13 6*
Zaaiplaats Tins	4 2*	4 1*	4 3*	4 4*	4 7½	5 0

* Buyers. † Sellers.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

August 10.—Transvaal Consolidated Lands (s), 12 noon.

Aug. 30.—General Mining and Finance Corporation, Ltd. (a), 11 a.m.

Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

SHIPS AND SHIPPING.

PROBLEMS OF THE BIG VESSEL—IS A SIZE LIMIT NECESSARY?

(From our Special Correspondent.)

London, July 6th.

Many hundreds of delegates, representing the overseas Dominions as well as practically all the maritime nations of the world, are attending the International Congress on Navigation in London this week. Representatives from Russia, the League of Nations, the International Commission of the Danube, the European Commission of the Danube, and the Rhine Commission and the Suez Canal Company are also attending.

The programme is a most comprehensive one. It is divided into two sections, one of which deals with inland navigation, and the other with ocean navigation. From a maritime point of view, the second section is the more important. In this the seven subjects to be discussed relate to the construction of new works in order to satisfy the future dimensions of ships; the types of works required for berthing ships of great draught in tidal seas and the relative advantages of ship equipment and port equipment for loading and discharging ships; the application of concrete, plain or reinforced, to hydraulic works; liquid fuel for navigation; utilisation of the tide for the production of power for lighting ports and working dock gates, etc., and recent advances in the lighting, buoying and signalling of coasts.

From an engineering point of view, it is very obvious that shipbuilding tendencies are piling up problems more rapidly than they can be solved. It would seem that the time has now arrived when a limit should be fixed to the size of vessels. Not only are the mammoths unsound business propositions, but dock authorities all the world over are becoming more and more perplexed in the economic handling of them.

Mr. F. E. Wentworth-Shields (Dock Engineer, Southern Railway, Southampton) said they had got 50,000-ton ships and might expect 60,000 and 70,000-ton ships shortly, and they did not know that it would stop there. Could they not get together and see what was to be the limiting size of the vessels of the future? He was doubtful if they could do that, certainly not this year. He agreed that the question should not be decided by the naval architect—who would build a ship from here to America, if asked—nor by the shipowner, but by the dock-owner, who would at last say to the shipowner, who found large ships cheaper to work: "I cannot take a larger ship than you are now sending unless you pay increased rates for the accommodation." Dock increases before the war cost £100,000 per berth. To-day the figure would be much larger.

Eventually, the Conference agreed to discuss the question in committee, and to adopt the following conclusions:—That with regard to the probable future dimensions of ships there is a tendency for economic reasons, connected only with the cost of running, for a general increase in the draught, but that, although the percentage of ships drawing 30ft. and over is likely to be greater, this increase will be limited by the facilities offered by the main canal routes and principal harbours of the world, which should tend to check this increase in draught. That there will be an increase in the average tonnage, more especially in ships of from 5,000 to 8,000 tons, but not in the tonnage of the largest present ship, in the very near future. That the accommodation to be provided for ships should be guided by the consideration of true economy, and that against any anticipated saving in the cost of running a ship due to increase of draught, the additional expenditure entailed at all ports at which such vessels will trade, entailing the necessary deepening of approach channels, dock and wharf walls, locks, dry docks, etc., must be taken into account, it having been shown that the cost of provision of these facilities due to increased draught varies approximately as the cube of the depth. That the provision of the facilities for the rapid and economical dispatch of goods on arrival at a port is as important as the provision of deep water, etc., as the cost of collecting and handling goods in the large sheds and wide quays necessary to fill the large ships to ensure quick dispatch is an important item in the cost.

"Leviathan" at Southampton.

Already the Southampton Harbour Board has been called upon to face additional expenditure as a result of the coming of the big liner. The most recent item is one of £38,000, which they are to share with the Southern Railway Company (formerly the L. & S.W.R. Co.) for enlarging the swinging ground. This sum is to be so spent only, however, provided the owners of the United States liner *Leviathan*, claimed to be the largest vessel in the world, guarantee to pay a minimum of £1,500 per annum in harbour dues for this vessel for five years.

This question of the *Leviathan's* tonnage does not even yet appear to have been satisfactorily settled. Formerly the tonnage of the *Majestic* was given as 56,551, and the *Leviathan* 54,282. Now the supremacy of the former has been challenged through the decision of the American Bureau of Navigation to approve officially of an increase in the tonnage of the *Leviathan* to 59,957 tons gross. The mysterious increase in the tonnage of the *Leviathan*, says a London expert, is probably due to an unorthodox method of arriving at the figures. Ships, of course, cannot be put on a weighing machine. The gross tonnage is calculated on the basis of certain space measurements. It appears that in making the latter estimate of the *Leviathan's* tonnage certain spaces usually excluded were taken into account. If the new claim of the United States Shipping Line is an advertising effort, it will be a costly experiment in publicity, as port dues are calculated on the basis of gross tonnage.

Wireless in Lifeboats.

Since the landing of the *Trevessa's* survivors, public attention has been directed to the question of providing ships' lifeboats with wireless installation. Apparently the problem has been solved; it is a case of expense rather than one of technical achievement. The Marconi Company, for instance, claim that they have a ship's lifeboat wireless transmitting set with a range of fifty miles in the Morse code, and a receiving radius of more than that figure. This is, in fact, already fitted in certain of the lifeboats of the big ocean liners. Altogether about forty ships have them fitted in their lifeboats. An official of the Marconi Company, who has watched their performance on the big boats, says they are perfectly dependable; they are tested in the port and once on the ship to see that the set is in order.

The Board of Trade regulations require that all sea-going vessels of over 1,600 tons should carry wireless, and the question they are now considering is contained among the recommendations of the Merchant Shipping Advisory Committee on life-saving appliances, training and organisation. The report, which was issued in April, recommended that motor lifeboats fitted with wireless should be carried in certain cases. "We think," the committee stated, "that on all vessels carrying more than fifteen boats it should be made compulsory that one of such boats should be a motor boat fitted with wireless, and that on all vessels carrying more than twenty lifeboats the compulsory number should be two such motor boats. If only one motor boat be carried, then it should be stowed so that it may as far as practicable be available for launching on either side of the ship. All vessels carrying more than ten boats should carry a lifeboat fitted with wireless if they do not carry a motor boat."

TRADE SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL BUT PROSPECTS GOOD—IRON AND STEEL—TIMBER AND BUILDING MATERIALS—IMPERIAL WIRELESS SERVICE—ACCEPTED TENDERS—BREVITIES—LATEST METAL QUOTATIONS.

General.

Business this week has again been on the quiet side, which is not altogether surprising considering the approaching end of the month. At the same time indications are apparent—said a leading importer of mining material—that the new mines are beginning to buy very substantially. The cereal crop prospects throughout the Union are, according to all reports, of a distinctly encouraging character, as are also expectations regarding wool.

The profits so far disclosed by the different groups for the quarter ended June 30 may also be said to be good, and the community is looking forward very hopefully to even better results during the next half-year.

The exports and imports of the Union for the first four months of the year, now published, are, it is considered, on the whole very satisfactory. The only drawback to our steadily forging ahead and leaving the present severe depression behind us is, of course, the wretched European position, which, unfortunately, appears to be as far off settlement as ever. Until some settlement is brought about oversea, we can, of course, look for no general improvement in conditions here. In the meantime, the community is hoping for the best.

Iron and Steel.

July month is petering out very quietly; the usual temporary spurt of activity to which merchants are accustomed to at this time of the month, has, on this occasion, been conspicuous by its absence. There is, notwithstanding, a feeling of hopefulness in the mining material circles regarding near future business.

Iron and Steel quotations remain unchanged from last week.

Mail advices: Britain: Iron and Steel: The Outlook.

Although trading during mail week has been a little more active, the spirit of caution has been everywhere in evidence. The general feeling is that the price situation is too dangerous to permit of free dealing, even if the demand warranted it. Market feeling certainly has become more cheerful; but the uncertainty of the Continental position continues to be a disturbing factor.

Pig Iron.

Only moderate business has passed in this department, although the position of English furnaces is understood to have been improved by increased supplies of cheaper fuel. At any rate, producers of pig iron are showing an inclination to compete keenly with any Continental offers which come into the market. Continental foundry iron has been quoted by merchants at £5 2s. f.o.b., without securing much business. Northamptonshire foundry iron is reported to have been quoted at £5 5s., delivered at works. Scotch No. 3 foundry iron can be bought at £5 10s. to £5 12s. 6d. at furnaces. There is little demand for either forge or basic iron.

Semi-Finished Material.

No large business has been reported in this market. On the other hand, one of the large Continental organisations is understood to be anxious to dispose of nearly 20,000 tons for delivery over the next three months. Prices have become somewhat weaker, and Continental 2-in. billets have been sold at £6 5s. f.o.b., with 1 in. at £6 2s. 6d. f.o.b. Some Belgian sheet bars have also been offered during the week. Wire bar quotations are somewhat weaker, and £9 10s. to £9 12s. 6d. per ton f.o.b. for rods in coils has been quoted. On the other hand, consumers' ideas of prices are about £10 10s. delivered.

Finished Material.

Competition in this market is keen. The general price of sheet bars is about £7 7s. 6d. to £7 10s. f.o.b., with joists about £7 5s.

Wire.

Continental competition is keen, but the British works are reported to be well booked with orders for some time to come. The German quotation for barbed wire, outside the occupied area, is £18 5s. f.o.b. Belgian quotations vary from £18 5s. to £18 15s.; whilst the British works are asking £23 15s. f.o.b. for barbed, £18 5s. f.o.b. for galvanised, and £16 5s. f.o.b. for varnished. German and Belgian galvanised wire has been quoted at £16 10s. f.o.b.

Quotations.

Pig Iron.—Cleveland Foundry No. 1, 127s., No. 3, 115s.; No. 4 forge, 110s.; mottled, 107s. 6d.; hematite, mixed Nos., 114s. Finished Iron and Steel.—Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £9 10s.; hard, £10 5s.; bars and angles, £10; tees, £11; joists and channels, £10 5s., sheets, singles, £13 15s.; doubles, £14 5s.; lattens, £15; plates, ship, £10 10s.; boiler, £11; rails, £10 10s.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots, fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 19s. 6d. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 23s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 20s. 6d. per cwt. Bolts and nuts, 50 per cent. discount. Staffordshire common bars, 14s. 3d., and galvanised corrugated sheets, 23s. per cwt. Tin Plates.—Basis price, 20 by 14, 26s. to 27s.

High-Speed Steel Scrap.

The engineering districts of England and Scotland are being scoured for odd parcels of high-speed steel scrap for export to the United States, where this scrap is being utilised as the raw material of similar grade material. By an oversight in the last American Tariff Act, any material which is designated scrap iron or steel can be imported free of duty so long as its value does not exceed 7 cents per lb.—a figure which is just above the current value of this particular scrap. As has been reported, there is a big war surplus of high-speed steel in Britain for which no purchasers can be found, and it is reported that the agents of the American importers have made a bid for the whole of it.

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Should they succeed in coming to terms with the authorities, the steel will be broken up into small pieces suitable for the melting pot and shipped across the Atlantic.

Employment in the Iron and Steel Industries.

Returns of employment in the various industries during May show little change in tinplate and sheet steel, and a slight improvement at iron works and in pig iron manufacture.

Egypt: Iron and Steel Imports.

The returns for 1922 show that imports of iron and steel rails and fittings, including sleepers, from the United Kingdom, dropped from £E115,673 in 1921 to £E58,722 in 1922. Imports from Germany during the same period rose from £E14,205 to £E49,315. Imports from Britain of iron and steel plates, not galvanised, fell, similarly, from £E52,909 in 1921 to £E12,853 in 1922.

United States: Market Conditions.

Production continues heavy, subject only to the handicap of the hot weather and the labour scarcity. Prices are easier on pig iron, and steady to firm on finished materials. Deliveries are heavy and stocks are not accumulating. Manufacturers generally are optimistic regarding the future. Buyers appear to be taking more interest in the market, and this may develop into an experiment of actual business when coke and pig iron prices become steadier. Japan is inquiring for steel rails and structural steel.

Pig Iron.

The production of pig iron continues heavy, and is practically at capacity; but a large number of huge furnaces intend shortly to shut down for repairs and re-lining after long runs, and this will probably affect the July output. Prices are somewhat weaker; No. 2 foundry was sold at Birmingham at 25 dollars. Basic has been sold in Western Pennsylvania at 27 dollars to 27 dollars 50 cents. Steel scrap prices are easier at 17 dollars to 18 dollars, Eastern Pennsylvania.

In Alabama the last idle furnace at Birmingham has been stacked up, and every blast furnace in that district is now active. Some furnaces have sold their output into the fourth quarter. In the Youngstown district, 42 out of 46 blast furnaces are in blast, and one additional furnace is preparing to start. This will bring the monthly pig-iron output of Youngstown to the record figure of 650,000 tons. Except for the tinplate trade, all the finishing departments of the steel mills are running to capacity; whilst only two open hearth furnaces are idle. Shortage of labour has been overcome to a large extent by increased efficiency and by the introduction of mechanical methods. In the Pittsburgh district 126 blast furnaces out of 138 are in full blast.

Steel.

The industry continues operating at the highest practical level; but operations have dropped off to 90 per cent. of productive capacity owing to the hot weather and through the workmen leaving the shops to take up outdoor occupations. This has brought up the question of labour scarcity and may necessitate an advance in wages.

Finished Material.

Bars, plates and shapes are firm at $2·50, although occasional orders are reported at $2·40. The steel mills are kept busy by the automobile trade and are turning out good tonnages. The tinplate mills are busy. Sheet prices are unchanged at $3 for 28-gauge, $3·85 for 110-gauge, and $5 for galvanised.

Second-hand Machinery Market.

This during the past week has not been animated by the feeling of strength existing during the past few weeks. Companies, said a leading dealer, are not very anxious to buy, except when they can pick up second-hand requirements cheap; but, as previously stated, there is a big scarcity of second-hand requirements, and spares that have been in demand have been purchased sparingly from new stocks. There is still a big scarcity of battery spares, second-hand steel plates and bar iron, round and flat, and it is only now and then that an occasional boiler and engine has been sold during the past week, and as some time will (fortunately for those outside the second-hand material trade) elapse before any company will close down and dispose of its materials, dealers, generally, are afraid that the second-hand machinery business will be very much depressed. Companies, said this prominent second-hand dealer, have become a little more diligent of late compared with former times, and when there is a company's machinery stock in the market they are first on the scene to pick up all their requirements. Trucks and rails are still scarce, although there are a lot of what is known as coal tubs for disposal. Otherwise, as stated, the market for second-hand material this week has been very slow.

Building and Timber Materials.

Business in the timber trade has slackened off somewhat during the past week or so, owing, principally, to the building trade having eased off. Prices are steady. The building trade is presently quiet, but expected to resume activity very shortly. Bricks and other building materials remain much about the same. Contractors are awaiting big events in the near future.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3⅞d.; floorings, 6d.; ceilings, 4d. to 4½d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8½d. to 8¾d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s., at coast; Japanese oak, 11½d. at coast; West African mahogany, 1 in. to 4 in. thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot, at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 3d. to 1s. 4d. per foot of 1 x 12, here; American pine shelving, 9d. per foot, 3-ply wood, 3m.m. up to 5 m.m., alder and birch, 4d. to 6½d. per sq. foot; oak and teak, 3-ply, 10d. per sq. foot. Brick Prices, etc.: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 6s.; 15 in., 7s. 6d.; 18 in., 9s.; dry red oxide, 14s. per 100 lb.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

Second-hand Iron and Timber Yards.

These remain presently in the doldrums with prices about the same, viz., about 4d. to 6d. for iron and 6d. to 8d. for timber.

Imperial Wireless Service.

The Postmaster-General hopes the licence and agreement with the Marconi Company for an Imperial wireless service will be signed within a month; that the high-power station at Rugby will be erected in about twelve months' time, which would enable the Imperial wireless service to be carried out in conjunction with Marconi; and states that the charges for wireless messages will be lower than the cable rate.

Tenders Recently Adopted by Johannesburg Municipal Council.

The British Agencies, Ltd.—for ampere size A.C. meters, £642 15s. 6d.; The Metropolitan-Vickers Electrical Co., Ltd.—for ampere A.C. meters and transformers, £564 10s. 6d.; Hubert Davies and Co., Ltd.—for ampere size A.C. meters, £1,631 5d.; Rice and Diethelm, Ltd.—for ampere size A.C. meters, £247 10s.; The Telegraph Manufacturing Co., Ltd.—for trolley wire, £636 5s.; Blane and Co., Ltd.—for 34,000 lbs. of coach screws at 29s. 6d. per 100 lbs., £501 10s.; The Telegraph Manufacturing Co., Ltd.—for twin and other cable, £8,642 17s. 6d.; Blane and Co., Ltd.—for transformers, etc., £378; Rice and Diethelm, Ltd.—for transformers, etc., £1,883 5s.; C. Kleudgen, Ltd.—for

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water meters, £329 18s. 6d.; The Griffin Engineering Co., Ltd., for supply air compressor and receiver, £1,200. Tenders called for: per October 2, for cast iron meter boxes; per August 24, for trailer for steam waggon. By Benoni Municipality, per August, for supply of water meters and water meter boxes.

Brevities: Cost of Living in Britain.

On June 1 the average level of retail prices of all commodities taken into account in the statistics prepared by the Ministry of Labour was approximately 69 per cent. above that of July, 1914, as compared with 70 per cent. at May 1.

Wage Changes.

Wage changes during May resulted in reductions in the pay of building operatives, boating and domestic engineers and electric cable makers. There were increases in the wages of iron miners in Cumberland, in Furness, and in Lincolnshire, of blast furnace workers in Cumberland and in Lincolnshire, of iron puddlers and millmen in the North of England and in the West of Scotland, and of Siemen's steel workers in South and West Wales.

British Trade in the Ruhr.

The President of the Board of Trade states that licences are now (June) being issued for the export of goods contracts for before February 1.

British Empire Exhibition.

Practically the whole of the space at the British Empire Exhibition allotted to the United Kingdom has been taken. Only comparatively few square feet are still available in the Palace of Engineering and the Palace of Industry.

British Coal Production.

The British output for coal for the week ended May 19 was 5,796,000 long tons, showing that the high rate of production is being steadily maintained.

British Shipping.

The tonnage laid up in British ports has increased by 30 per cent. during the past quarter, and now amounts to 709,000 tons.

Financial.

The Newfoundland Government 5 per cent. loan of £423,500 has been heavily over-subscribed in London at 96½.

Dumping Duty on Cement.

The first Proclamation issued under section 12 of the Customs and Excise Duties Amendment Act of 1923, which provides for the imposition of a dumping freight duty in certain circumstances, is published in the current issue of the *Government Gazette*. The duty is to be applied in reference to superphosphates and cement imported from certain countries in Europe. The Proclamation sets out that: "(a) Superphosphates are being carried to the Union from Great Britain, Holland, Belgium, and Germany; and that (b) cement is being carried to the Union from Great Britain, Holland, Belgium, Germany, Norway, Sweden and Denmark, at rates of freight that are detrimental to the production or manufacture of those goods in the Union." And goes on to proclaim that: "(a) Superphosphates shall not be carried to any port in the Union from Great Britain, Holland, Belgium and Germany at a lower rate of freight than 17s. 6d. per ton of 2,240 lbs. gross weight; and (b) cement shall not be carried to any port in the Union from Great Britain, Holland, Belgium, Germany, Norway, Sweden and Denmark at a lower rate of freight than 17s. 6d. per ton of 2,000 lbs. gross weight, and that from and after the date of this my proclamation in the *Gazette* there shall be charged, levied, collected and paid on these goods on importation into the Union from the countries named herein—except such goods as were exported to the Union from those countries at the date of publication hereof in the *Gazette*—a special Customs duty (or dumping freight duty) equal to the difference between the net freight rate paid, or to be paid, and the rate determined as aforesaid.

Angola Minerals and Trade.

In a British consular report on Portuguese Angola it is stated that the main feature of the trade in the past year has been the increase in the importation of German goods. The report goes on to say that, apart from diamonds, no minerals of importance are being worked, except on a very small scale. Marked attention has been given of recent years, however, by outside interests to the mineral possibilities of the country, and prospecting operations are being carried on extensively. The Bembe copper mines have again received attention in the last few years. Formerly these mines were extensively worked by the natives, by whom from 200 to 300 tons were brought down annually to Ambriz. In 1919 a concession to work the mines was obtained by Loanda interests and a company known as the "Minas do Bembe, Limitada" was formed for that purpose. The company is to be reorganised and the capital raised to £1,000,000 by the end of 1923. Coal is found on the Benguella plateau. The chief British interests in the country are those relating to railway and development. The Angola Oilfields, Ltd. (Concessões de Petroleo de Angola) has prospecting rights for oil over a large territory but so far has not done much to develop its concession. British capital likewise has recently secured an important interest in the Companhia dè Diamantes de Angola. There are two British firms in Loanda, one having a coal depot and a fleet of lighters and carrying on general import business, and the other being particularly interested in the import of railway material and rolling stock and machinery. Another concern has trading establishments at Cabinda and elsewhere in the Enclave. The West African Telegraph Company and the Eastern and South African Telegraph Company have cable stations at Loanda and at Benguella and Mossamedes, respectively, and the harbour contracts at Loanda, Lobito and Quitanda are held by British firms.

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AN OUTSTANDING FEATURE

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General Mining and Finance Corporation, Ltd.

(Incorporated in the Transvaal.)

P.O. Box 1242

General Mining Buildings,
Johannesburg.
23rd July, 1923

Dear Sir or Madam,

NOTICE IS HEREBY GIVEN that the Twenty-third Ordinary General Meeting of Shareholders of the General Mining and Finance Corporation, Limited, will be held in the Board Room, General Mining Buildings, Johannesburg, on THURSDAY, the 30th DAY OF AUGUST, at 11 a.m., for the following purposes:

1. To receive and consider the Balance Sheet and Profit and Loss Account, and the Directors' and Auditors' Reports for the year ended 31st December, 1922.
2. To elect a Director in place of Mr. Jacob Freudenthal, who retires in terms of the Articles of Association, but who is eligible, and offers himself for re-election.
3. To appoint an Auditor or Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors.
4. To transact any other business which ought to be transacted at an Ordinary General Meeting.

The Share Transfer Books of the Corporation will be closed as follows:—

(a) At the Head Office from the 27th of August to the 13th of September, 1923, both days inclusive.

(b) In London from the 27th of July to the 4th of August, 1923, both days inclusive.

Holders of Share Warrants to Bearer desiring to be present or represented at the Meeting should deposit their Shares at the places and within the times following:—

Johannesburg.—At the Head Office of the Corporation, General Mining Buildings, at least three days before the time appointed for the holding of the Meeting; or

London.—At the London Office (Transfer Department), Winchester House, Old Broad Street, E.C.

Paris.—At the Bank de l'Union Parisienne, 7 Rue Chauchat, at least thirty days before the date appointed for the holding of the Meeting.

By Order of the Board,

H. W. DALTON,
Secretary.

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Your especial attention is directed to page 591 of the July 21st issue of the "S.A. Mining and Engineering Journal" dealing with boiler installations. The Baldwin Locomotive Works are the exclusive foreign agents of the LADD Water Tube Boilers referred to in this article.

We strongly urge serious consideration of Ladd Boilers for future power installations or increases in present plants, and look forward to receiving your inquiries.

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The Mauss Separator—West Springs Progress—Tanganyika Minerals—Symposium on Miners' Phthisis—Oil in East Africa—The Platinum Discoveries with Map—Sheba Results.

Industries The South African Commerce
Mining & Engineering Journal
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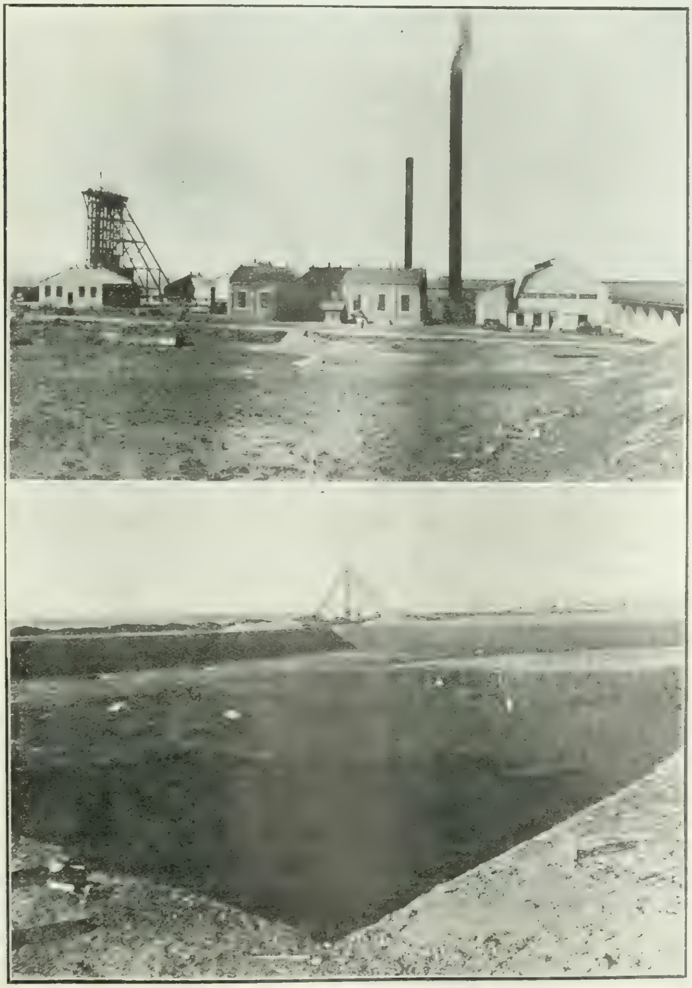
Finance Established 1891. Transport

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, AUGUST 4, 1923 No. 1662

Progress of Surface Works, West Springs.



The above views reflect the latest phase of equipping the West Springs Mine. The top picture shows the works at the No. 1 shafthead; and the one below the excavations made for the new reduction plant.

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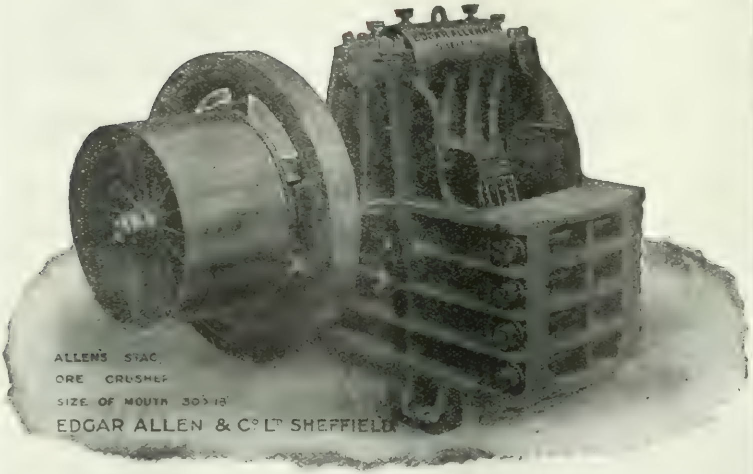

INTO the making of these machines, as of all Edgar Allen Crushing and Grinding Machinery, goes the skill of experienced steel founders and alloy steel experts. Every steel casting required for them is made in the Edgar Allen foundry, and is consequently subjected to stringent supervision. The qualities of steels for the wearing and other parts are selected in collaboration with the tool and alloy steel departments.

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The Petroleum Problem of South Africa.—IV.

THE DEMAND FOR OIL AND OIL PRODUCTS IN THIS COUNTRY—PETROLEUM AND PROFITS—ESSENTIALS FOR SUCCESS IN THE SEARCH FOR OIL.

The value of petroleum and petroleum by-products imported during twelve months into the Union of South Africa, Northern and Southern Rhodesia, and the South-West Protectorate is very nearly £4,000,000, and from these figures alone it should be obvious that the discovery of workable petroleum deposits in South Africa would be a matter of prime importance. The consumption of oil and oil by-products is increasing in this country, and would doubtless continue to increase very rapidly if abundant local supplies, at a reasonable price, could be guaranteed. These commodities are not only in great demand for domestic and transport purposes; a demand has also arisen at the principal ports for oil-fuel and is certain to grow at a very much greater rate than the means to supply it. At a Pan-Pacific Commercial Conference, which was held in Honolulu, Hawaii, during the month of November, 1922, a message was received from Secretary Fall, of the Interior Department of the United States, in which he spoke of oil as the logical marine-fuel for the next twenty-five years. "During the next twenty-five years, then," he said, "the prosperity of the nations that you represent will depend upon the availability of an adequate supply of petroleum rather than of coal. If one nation has fuel-oil propelled ships its competitors must have the same, or abandon much of the trade. The present problem is not whether there will be coal for the next 600 years, but rather will each nation have a full supply of fuel oil for marine purposes for the next 25 years."

Oil Fuel Progress.

As a result of the already colossal requirements of the various navies of the world and its mercantile service, the building and use of oil-tank service vessels have been enormously active. Not including navy, admiralty, and other Government tankers, the world's total carrying capacity at the end of June, 1922, was 4,806,404 gross tons, including sailing vessels and barges, of which the United States claimed 2,460,562 tons, and Great Britain 1,732,993 tons. The carrying capacity of the American vessels alone was equal to more than 1,000 million gallons. In order to show how necessary are the services of these vessels which convey oil-fuel to the various bunkering ports one may refer to the statistics of oil-fuel burning ships in which steam boilers are still used, and of oil-engined ships which are driven directly by internal combustion engines. The progress made in these two descriptions of oil-power during the three last years for which the figures are available at the moment, is shown in the tonnage as follows:—

	Oil fuel. Tons.	Oil engines. Tons.
June 30, 1920	8,345,913	693,334
June 30, 1921	12,415,181	959,471
June 30, 1922	13,838,178	1,666,370

or a total, in the middle of last year, of 15,504,548 tons. In the long list of the world's bunkering ports, whence supplies of oil are obtained by these oil-using vessels, we find the names of Capetown and Durban, with tankage controlled by the companies mentioned:—

Capetown: Anglo-American Oil Co., Ltd.; Anglo-Mexican Co., Ltd.; Asiatic Petroleum Co., Ltd.

Durban: Anglo-Persian Fuel Oil.

The necessity of adequate and convenient sources of fuel-oil in the immediate future will greatly enhance the value and importance of these and other South African harbours if they can obtain their supplies from South African sources instead of importing them in tankers from abroad. In such circumstances a very large trade in oil fuel alone may reasonably be looked for.

Some Rewards of an Oil Industry.

The justification for the building up of an oil industry in this country has been only briefly touched upon in the reference to the existing imports and to the possibility of a future expansion of the local demands. The rewards that await those who may be fortunate enough to discover large workable deposits of petroleum need, also, be very briefly discussed. One can best deal with this question by referring to the profits made by oil undertakings in other parts of the world, and in this connection the business of the various Standard Oil companies naturally comes to mind. In an article upon dividends and labour conditions in the oil industry of the United States a correspondent of the *Manchester Guardian Weekly* pointed out on November 10 last year that "attention has been focussed once more on the oil industry because of the enormous stock dividends which it has been declaring—within a fortnight the Standard Oil Company of New Jersey has declared a stock dividend of 100 per cent., the Vacuum Oil and Ohio Oil Company, both Standard subsidiaries, 300 per cent. stock dividends, the Standard of New York a 200 per cent. dividend, and the Californian and Kentucky companies smaller dividends. Others are reported about to follow suit." The Standard of Indiana paid a stock dividend of 2,907 per cent. in 1913.

These profits have not been made by economies, we are told; the lavish salaries paid to officers and directors and the grand manner of the expenditure of these companies generally is merely an indication of the vast sums of money that flow in golden streams from their oil wells.

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The Royal Dutch Shell Company has some interest here in South Africa, through one of its subsidiaries, the Anglo-Saxon Petroleum Company, which, after an option for twelve months over the [illegible] properties of the Messrs. Oil Corporation, Ltd., near Wellington, and "turned them down after their geologist had spent no less than thirteen months in an examination of them." The Royal Dutch, regarded as the great competitive rival of the Standard Oil Company, we find the following facts in the issue of June 1st, of Oil Engineering and Finance:—

"Royal Dutch Shell.—The final dividend of this company has recently been announced and shows that, in addition to the previous dividends, 16½ per cent., less tax, was declared, bringing the total dividend for the year to 26½ per cent., less tax, compared with 31 per cent. for 1921. The Shell Company (a subsidiary) declares a final dividend of 2s. 6d. per share, free of tax, making 22½ per cent. for the year, compared with 27½ per cent. for the previous twelve months. Prior to 1921 the Shell Company, for a period of eight years, distributed dividends to the extent of 35 per cent. per year." In the editorial notes the diminution of dividends is explained as being due to industrial and other difficulties, which may be only of a temporary kind. Another subsidiary, the Royal Dutch Co., paid a dividend of 41 per cent., while the Mexican Eagle Oil Co., Ltd., paid 40 per cent. on ordinary shares and 50 per cent. on preference shares. The capital of these companies runs into millions of pounds, it may be remarked. Another recent dividend that comes to mind is that of the Lobitos Oil Fields, Ltd., of 25 per cent., and a bonus of 15 per cent., both free of income tax, making 50 per cent. free of income tax for the year 1922. The sum of £100,000 was placed to reserve account; £250,000 to taxation reserve account; £100,000 was written off against cost of steamers, and £181,[illegible] was carried forward.

Petroleum Geology.

It has been shown that the results of the petroleum business in the case of these companies, for example, are very gratifying, but it may be asked whether there are not many less pleasing instances, or even complete failures in the annals of this great industry. There are many, as a matter of fact, but they may largely be shown to be the result of misdirected financial effort, or of enterprises that have been based upon too limited an area of investigation or upon unsound theory and inadequate information. The rewards of success, however, have been in the aggregate so enormous that they have abundantly compensated for the failures. Oil-hunting is, admittedly, a gamble in most cases; but it is an exhilarating gamble to those who can afford it, and the prizes may be colossal. Among the essential conditions of success are sound, honest finance and competent methods of investigation. Oil geology, while not nearly so far advanced as other branches of knowledge, has already acquired a creditable reputation as a result of the work that has been done in various oilfields by those who have made a scientific study of the data and phenomena of the oil-bearing formations of the world. "Wildcatting," or the tentative putting down of boreholes, is still necessary in every new field, but the evidence of such boreholes, in competent hands, has a certain amount of value in indicating further lines of procedure. We have heard a great deal in South Africa about drill men who have staked their reputation upon the finding of oil at one place or another and at certain depths, more or less. Large sums of money have been spent by South Africans in following the advice and guidance of mechanics who were capable and efficient in every way at the drill, and doubtless estimable men generally, but geology and drilling are two entirely different departments of learning and skill, and it is desirable that this fact should be clearly understood if the search for oil in South Africa is to be carried out in a satisfactory sort of way.

Another essential condition is the possession of a sufficiently large area in order to increase the chances of obtaining oil in a likely district and to avoid the wasteful expenditure and losses that are incidental to competitive drilling. One of the most important principles of oil-field development is the proper spacing of wells. The practice differs in different fields, and authorities do not always agree. The more conservative company officials say that experience in California, for instance, indicates that one well in ten acres is enough, provided the oil is not wanted in a hurry; while if it is needed quickly, and the pressure, depth and richness are unusually great, one well in five acres is enough. The competitive conditions which have resulted from a very large number of owners at Santa Fe Springs, Signal Hill and Huntington Beach, close to Los Angeles, where everyone is anxious to get as much oil out of his little plot of ground, and out of his neighbours, as possible, have been wasteful and reckless in the highest degree.

Where competition of this kind takes place millions of pounds may be squandered on unnecessary work. Where, on the other hand, large areas are available, the work can be carried out on the soundest business principles and in accordance with the most efficient technical advice. The advantage of being able to work upon scientific lines may be demonstrated by reference to the fact that from 16,000 to 25,000 wells have been put down in the United States in a year, and of these some 75 per cent. have been successful because they have been drilled under expert geological direction and after geological recommendation.

In concluding these articles the writer would like to point out that the petroleum problem, in so far as it concerns South Africa, is one that may well be taken in hand by South Africans themselves. The initial expenses in connection with the financing of undertakings from Europe are, naturally, very heavy, and the foreign control which follows as a result of this provision of capital from abroad must be, to some extent, detrimental to the best interests of a large industry, and, therefore, to the best interests of the country itself.

SELECTED NEW PATENTS.

675. René de Sorigny, Chiappini Chambers, St. George's Street, Capetown, and Alfred Segal, 5 Prince Street, Capetown.—A new or improved method and apparatus for the distillation of alcohol spirit and ethers. P. 14/7/23.

676 and 677. Edgar Arthur Ashcroft, 32a Liverpool Street, London, England, and of Waye, near Ashburton, South Devon, England.—Improvements in the treatment of zinc lead sulphide ores, mattes and the like. C. 16/7/23.

679. William Griffith Williams, Box 3146, Johannesburg.—Improvements in apparatus or plant applicable for classifying or grading and concentrating crushed ore products and loose alluvial metalliferous and other fragmentary or granular materials. P. 18/7/23.

680. Armour Hall, Ussher Industrial Sites, Booysens Road, Johannesburg.—Improvements in nuts, bolts and the like. P. 18/7/23.

682. Goodman Manufacturing Co., 4734 South Halsted Street, Chicago, County of Cook, State of Illinois, U.S.A.—Apparatus for handling loose materials. C. 18/7/23.

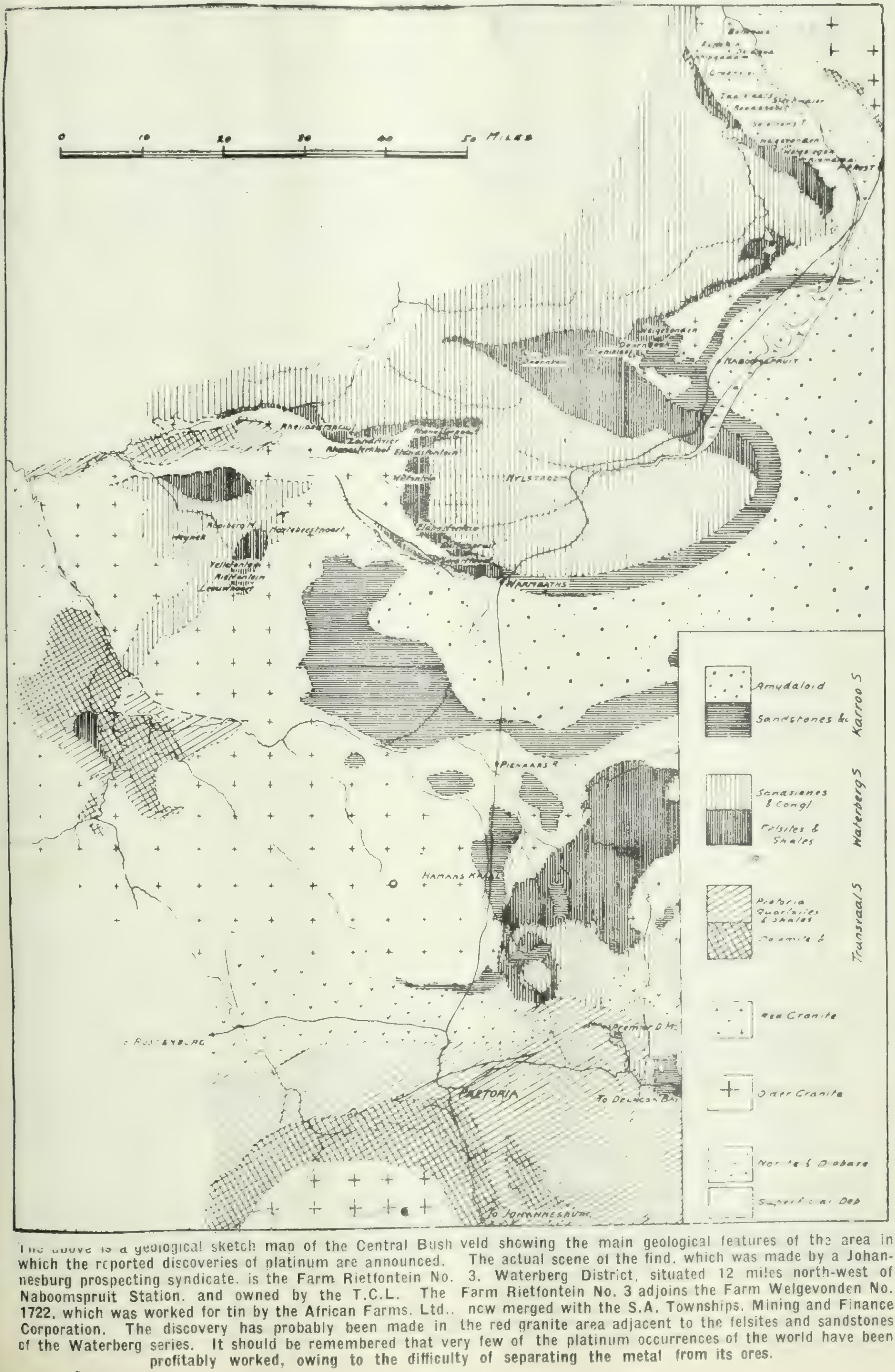
683. Metropolitan-Vickers Electric Co., Ltd., 4 Central Buildings, Westminster, London, England.—Improvements in control systems for dynamo electric systems. C. 18/7/23.

685. International General Electric Co. Inc., 120 Broadway, City of New York, New York, State of New York, U.S.A.—Improvements in and relating to the process of producing drawn wire capable of high electron emissivity. C. 18/7/23.

686. Marine and Locomotive Superheaters, Ltd., 195 Strand, London, W.C.2.—Improvements in safety devices for waste gasfeed water heaters for locomotive and similar boilers. C. 18/7/23.

687. S. T. S. Simister, 15 Adelaide Place, Everton, Liverpool, Lancaster.—Improvements in or connected with power machines and for transforming oscillatory motion into rotary motion. C. 18/7/23.

The Platinum Discoveries in the Waterberg.



The above is a geological sketch map of the Central Bush veld showing the main geological features of the area in which the reported discoveries of platinum are announced. The actual scene of the find, which was made by a Johannesburg prospecting syndicate, is the Farm Rietfontein No. 3, Waterberg District, situated 12 miles north-west of Naboomspruit Station, and owned by the T.C.L. The Farm Rietfontein No. 3 adjoins the Farm Welgevonden No. 1722, which was worked for tin by the African Farms, Ltd., now merged with the S.A. Townships, Mining and Finance Corporation. The discovery has probably been made in the red granite area adjacent to the felsites and sandstones of the Waterberg series. It should be remembered that very few of the platinum occurrences of the world have been profitably worked, owing to the difficulty of separating the metal from its ores.

Tanganyika Minerals.

GOLD, COPPER AND MICA.

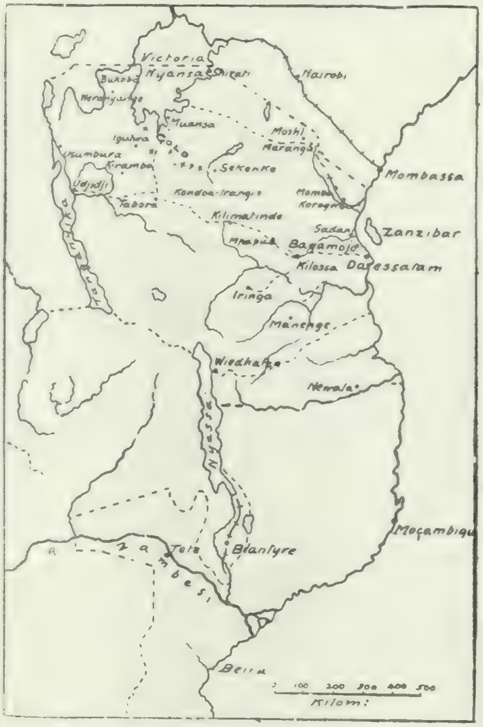
Captain G. F. [illegible], Deputy Director of the Land Survey and Mines Department, Tanganyika Territory, lectured before the Royal Colonial Institute recently and referred to the general business as to the situation in Tanganyika Territory since the British system of administration has been established. He went on to say:—

Mineral Wealth.

"I now come to what in my opinion holds a great future for the territory in addition to its agricultural development, and that is its mineral resources. The mineral wealth of Tanganyika has not yet been ascertained, and, from the statements of people resident during the German regime, mining, other than perhaps mica, was not encouraged. The statement that the German Government did not desire to make known in the period preceding the war the extent and value of its minerals would appear to be borne out by the number of secret files containing reports on minerals in various districts which have come into the possession of the Government.

Mwanza Rich in Gold.

"That the country is rich in gold there is no doubt, and perhaps the most important district in this respect is the Mwanza district and the adjoining area in which is situated the Iramba Plateau. Numerous gold claims were pegged in the Mwanza district, and several mines were producing gold during the German administration. The most important were at [illegible] at Sekenke on the Iramba Plateau, and the mine of the Kironda Goldminen Gesellschaft, who, despite the heavy capital expenditure on this mine, paid a dividend of 10 per cent. in 1912. This mine has been purchased, and the opening up and development has again commenced. It was from this mine that the gold was obtained from which the well-known Tabora sovereigns were coined. Prospectors in the Musoma district of Mwanza have discovered a new quartz reef running for about 14 miles, on which numerous claims have been pegged. The Government Inspector of Mines has given a very favourable report on the area. This quartz reef at a depth of 70 feet and with no [illegible] width was giving an average of 2 ozs. of gold to the ton. Although of great value to the claim holders, it is most desirable that such an area be properly developed and mined on the economic methods of modern mining practice, and this can only be done by companies with the necessary capital.



Map of Gold Occurrences in Tanganyika.

Reefs Similar to Rhodesia.

"It is the opinion of expert geologists that apart from the quartz reefs similar to Rhodesia which are being exploited, the conglomerate formation similar to the Rand will be found [illegible]. One of the German geological maps denotes such a formation in one particular area.

"The Karoo formation of coal-bearing strata exists in many districts of the Territory. Doctor Teale, an expert geologist, was seconded from the West Coast to examine the territory in regard to its coal possibilities other than the known area at Kivira, near to Tukuyu, which had been reserved from prospecting by the German Government. Valuable reports were obtained and further exploration was commenced by the grant to European firms of sole prospecting licences, and boring operations were in progress on two areas. It is regretted that after a preliminary bore was put down the firm in question decided to suspend operations, and the presence of economic coal in this area only 50 miles from the Central Railway has still to be proved. Unfortunately, Dr. Teale met with a severe gun accident which necessitated his return to England, and the further examination of the territory was suspended. It would be of the greatest value to the Government to continue in a thorough geological survey of the territory, and an examination of its resources.

Mica.

"The mining and export of mica, which in 1911 amounted to £17,414, has again been commenced. The principal mines containing (Muscovite) a ruby mica little inferior to the Indian ruby mica, are in the Uluguru Mountains, but new areas are being opened up along the Central Railway, in West Usambara, and the Pare Hills, also in Ujiji district. From the latter district a large book of mica (clear ruby), measuring more than 2 feet square has been obtained and is being sent for exhibit at the British Empire Exhibition in 1924.

Copper.

"Copper is known to exist in several areas, principally in the form of malachite, the primary ore of which in the Ujiji district was found to be cuprite. These ores give an assay of as much as 10 per cent. metallic copper, and it is proposed to send the ore from certain claims at present being worked to England for treatment. Minerals containing a high percentage of uranium have been found in the Uluguru Mountains. These are pitchblende, rutherfordine (a yellow carbonate of uranium) and samarskite, found in the Pegmatite veins in the Morogoro district. In addition to the above minerals there are in the territory hæmatite iron, manganese, cobalt, nickel, amethysts, garnets, graphite, asbestos, soda, and potash deposits, valuable salt springs and deposits, also marble.

Oil.

"There are indications of mineral oil in the territory, and prospecting for oil is now permitted under the 'Oil Mining Ordinance, 1922.' The Mining Ordinance and Regulations came into force in June, 1921, and safe mining regulations have also been enacted."

Satisfactory Results from the Sheba.

NEW PLANT RUNNING—REDUCED COSTS ACHIEVED—DEVELOPMENT PROSPECTS.

The report of the Sheba Gold Mining Company shows that the reconstruction which took place a year and a half ago has been fully justified by the results already achieved. Mr. C. B. Kingston, the consulting engineer, describes the year as "one of strenuous effort under trying conditions," and adds—"the adoption of a new process imposed an extra strain upon the whole organisation, but this will be compensated for during the current year by the substantial increase in the extraction that it makes possible." The whole of the capital of £297,127 in 1,188,510 shares of 5s. each has been issued. The latest report, dated June 30 last, is as follows: "Zwartzkopje—No. 5 level schist stope driven 41 ft.; average value last 26 ft., 2 oz. 4 dwt. over 75 in., last sample 3 oz. 16 dwt. over 48 in.; No. 10 level east drive, average value last 14 ft. 18½ dwt. over 40 in., last sample 16½ dwt. over 48 in.; No. 9 level rise, average value to 38 ft., 19 dwt. over 32 in., last sample 5¼ dwt. over 24 in.; No. 2a borehole winze, sample at 60 ft., average 1 oz. 3 dwt. over 36 in. Intombi—No. 10 level, west drive, is 297 ft., average value last 35 ft. 8½ dwt. over 30 in., last sample 14½ dwt. over 30 in." The officially estimated ore reserves are 84,785 tons, averaging 9·7 dwt. Special attention should be given to the reports of the general manager, Mr. G. D. Brown, and of Mr. C. B. Kingston, consulting engineer, both of whom, with the rest of the staff on the mine, have deserved well of the shareholders.

Manager's Report.

The report of Mr. Brown describes the chief features of underground work as the sinking of the new inclined shaft in Zwartzkopje mine, the cutting of a hoist chamber for this shaft at No. 7 level, and the widening of No. 7 level drive for the installation of mechanical haulage. The programme of expenditure, resolved upon early in the year, only permitted of a restricted system of development and exploration, confined to the more essential points of the mine; but 1,759 ft. were accomplished, irrespective of 149 ft. of diamond drilling. This is only part of the work done, which, in its entirety, is indicative of the energy displayed by Mr. Brown and his staff. The manager gives details of work in which construction played a great part. This included the reconditioning of the plant. A full-sized experimental plant was put up to prove, on a working scale, if the Minerals Separation process could be made effective for concentrating Zwartzkopje and Intombi ore. The plant was completed in July, 1922, by the end of which month it was decided that the process would be adopted. Greater progress would have been made, but the labour employed was unsatisfactory, and it was not until December that 15 stamps could be set in motion, and on February 25 the manager was able to say: "It is gratifying to know that it has been proved by actual running of the plant that a much higher extraction of gold can now be obtained than in the past." The total expenditure during the year was £80,280.

Consulting Engineer's Report.

The report of Mr. Kingston is confirmatory of that of the general manager. Mr. Kingston speaks of the shaft as providing "a most efficient means of working the development operations, whilst at the same time extending exploratory and development work." He mentions that there are 700,000 tons of tailings on the dumps, assaying 2·8 dwt. fine gold per ton, retreatment of which might prove profitable. This would be by the flotation patents of Minerals Separation, Ltd., and he says: "It appeared that the treatment of all the ore by flotation might reduce future tailings from 2·8 dwt. to 1 dwt., or less, per ton, a saving of about 8s. per ton." Other improvements are contemplated, and Mr. Kingston describes how difficulties met with have been overcome, so that, at the end of the year, crushing could be started. The new plant consists of 30 stamps and two tube mills, and the results so far obtained are in accordance with those of the laboratory tests, whilst the tailings discharged from the flotation machines contained less than 1 dwt. gold. The anticipated saving of 8s. per ton, he says, as compared with the average of the old tailings, is being realised, which means an increased extraction of between 15 and 25 per cent. Mr. Kingston urges the necessity of vigorous development work, so that the ore treatment can be increased. He mentions that, at the 10th level of the Intombi, some high-grade ore has been found and that there is every prospect of more of this being opened up in new levels to be driven.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

August 10.—Transvaal Consolidated Lands (s), 12 noon.

Aug. 30.—General Mining and Finance Corporation, Ltd. (a), 11 a.m.

Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

The Sherwood Starr.

In our Rhodesian mining notes of last week we incorrectly spelt the name of the new mine which is being developed under Bailey auspices there. The correct spelling of the name, which will doubtless come into prominence in the very near future, is the Sherwood Starr, and not as printed by us last week. The name Sherwood takes its title from the Sherwood block of farms upon which the mine is located.

A London View of the Market.

A London correspondent, writing by the last mail, sums up the position of the market for our shares there in the following pithy passage. He writes: "The South African market cannot smile in the midst of such universal gloom"; a reading which is only too fully borne out by the cables received during the week.

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The Symposium on Miners' Phthisis.

DR. A. J. ORENSTEIN'S SUMMARY OF THE CONTRIBUTIONS—VENTILATION AND ATMOSPHERIC CONDITIONS—QUESTION OF DRILLS

The following is a summary of the contributions to the Miners' Phthisis Symposium prepared by Dr. A. J. Orenstein, and submitted at the last meeting of the Chemical, Metallurgical and Mining Society.

The Symposium on Miners' Phthisis was opened at the [illegible] March, 1921, meeting, and the society is to be congratulated on the quality as well as the quantity of the contributions made. The total number of contributions aggregate twenty-seven. The final one was made in April of the present year. The majority of the contributors dealt with the prevention of miners' phthisis from the standpoint of measures to be taken underground. It is noteworthy that the importance of adequate ventilation was stressed by the majority of contributors.

Ventilation.

Of the contributions dealing with the importance of ventilation, the report of the Joint Committee of the Government Mining Engineer's Department and the Chamber of Mines, read by Mr. C. J. Gray at the October, 1922, meeting, is particularly interesting. In this report it is pointed out that the water blasts do not wash out fine dust, that this fine dust remains suspended in the air for many hours in spite of the water blast, and a special point is made of the fact that the dangerous dust can only and must be removed by ventilation. Mr. J. A. Woodburn at the November 22, 1922, meeting supplemented this dictum by reading extracts from a paper read before the Australasian Institute of Mining and Metallurgy, in which it is pointed out that, in addition to its value in preventing miners' phthisis, the influence of ventilation on efficiency is of great importance, and for that reason the ventilation of mines should receive most careful consideration. Dr. Mavrogordato, in his paper read last April, points to experimental evidence from which it appears that good ventilation results in less dust.

Soluble Silica as the Cause of Miners' Phthisis.

A paper of special interest was contributed to this symposium in May, 1922, by Dr. Gye, of the National Institute for Medical Research, London. In this paper Dr. Gye puts forward the novel view, based on certain experiments performed by himself and his associates, that silicosis might be caused by soluble silica, i.e., the conversion in the tissues of SiO_2 into colloidal silica. Dr. Gye's hypothesis—if proved—would mark a new and very important step forward in the study of miners' phthisis. At present one must acknowledge that the experimental evidence put forward by Dr. Gye is not entirely convincing.

Lectures to Miners.

A very interesting suggestion, and one which might receive further consideration by the society, was made by Mr. Hendrikz, the late Organising Secretary of the Miners' Union, at the April, 1921, meeting. Mr. Hendrikz, who was himself a working miner and whose knowledge of the psychology of local miners is probably very extensive and reliable, stated that a large proportion of underground men are not conversant with the risks of miners' phthisis and the conditions which bring it about, and suggested that lectures might be given to working miners at the various mines by members of the society.

Respirators.

At the same meeting, Mr. E. M. Weston spoke of the possibility of using properly designed respirators as a means of preventing miners' phthisis. He stated that "gravimetric" tests showed an efficiency of about 95 per cent. at an experiment performed with a respirator invented by himself. I must point out, however, that "gravimetric" tests are not of very great value in ascertaining the efficiency of a respirator, because it is quite probable that a respirator which catches 95 per cent. by weight of dust would permit in the 5 per cent. which passed through it the passage of the most dangerous dust, the dust weight being made up of the large, heavy, but from a miners' phthisis point of view harmless particles. From a practical point of view I do not think respirators can be relied upon to play an important rôle in the prevention of miners' phthisis.

Improvements in Drills.

At the June, 1921, meeting, Mr. Alexander Richardson stated that a rotary type of drill would almost entirely eliminate dust, and that such a machine would be preferable economically to anything at present on the market. It seemed to him that it was strange that the invention of a more suitable drill was not taken in hand by the industry by means of systematic research and trial. In the August number Mr. William Allen suggested the adaptation to the drill of a dust catcher, consisting of a soft cap fitting over the hole from where the dust would be extracted by a compressed air jet, and passed through a dust trap. I believe that experiments have for some time been, and are now being, carried out on these lines. At the September, 1922, meeting Mr. Hugo C. Smith reported the results of certain experiments carried out with the Leyner type of drill, modified with the view of preventing excessive dust formation. The modifications made were based on the theory that the air which accompanies the water through the hollow steel is dust laden as it emerges in the form of bubbles from the hole. Therefore, various modifications were made in the drill to reduce the amount of air passing through the steel. The results obtained were on the whole satisfactory.

Atmospheric Conditions in Relation to Miners' Phthisis.

At the September, 1922, meeting, Mr. J. D. Marquard read a very stimulating paper, in which he voiced his view that the general atmospheric conditions in the mines have considerable bearing on the incidence of miners' phthisis. This paper was reviewed at some length by Mr. H. J. Ireland at the meeting of February 17, 1923. Mr. Ireland agrees that the main contention of Mr. Marquard, which is in effect that hot, humid conditions act deleteriously on the lung tissues, is correct. He points out, however, that Mr. Marquard's suggestion that ventilation by compressed air is deleterious, because of the possible presence in the compressed air of fine oil particles, is not based on sound physiological data. I may add to this that I agree with Mr. Ireland. I would also reply in the negative to Mr. Marquard's question as to whether the presence of living organisms in the air is essential to health. It is only fair, however, to add to this that there does appear to be a substance in the atmosphere the removal of which, by such means, for instance, as filtration through cotton wool, affects the "freshness" of the air, and makes it less pleasant. What this substance is, it is at present impossible to say. It was suggested that it is a catalyst. It is also possible that it is an electric charge.

Finally, I will attempt to reply to some of the questions raised by Mr. Johnson at the January, 1923, meeting. Whether the silica dust (SiO_2) is converted in the lungs into gelatinous silica is at present still under investigation. So far as is known dump-men and people living in the vicinity of the dumps do not contract miners' phthisis, at least not in the advanced stages. Silica is observable in the lung *post mortem* as crystals of SiO_2. "Potters' Asthma" appears to be a very vague term. It probably also covers silicosis. Mr. Johnson's suggestion that if there were no conversion of silica in the lungs the larger particles would do more harm than the minute particles, is one of the contentions of those who believe in the theory advanced by Dr. Gye. I think, gentlemen, this is all I could cull from the published discussion of these meetings. I have put the synopsis as briefly as possible and without in any way trying to arouse a controversy, because all these points were fully discussed at the various meetings. I think the success of this Symposium has been such that the society is justified in keeping in mind the possibility of having symposia on other subjects of general interest to our members, and I hope that the incoming council will take this into consideration.

The Week in the Sharemarket.

STAGNANT, IN SYMPATHY WITH LONDON—DIAMONDS IRREGULAR—MARKET RUMOURS.

The market has been stagnant throughout the week, in sympathy with London. The local sentiment is for better prices, but each attempted advance has been stopped by oversea selling. Of Corner House stocks, Modders have suffered from London offerings. Modder B have been a steady market, and City Deeps have been firm. Barnato stocks were notable for the firmness of Langlaagte Estates, for which there was considerable inquiry at one time. New States firmed a trifle, but latterly were inclined to be sellers from London. Consolidated Gold Fields stocks were irregular. Robinson B fell back a little. Sub-Nigels, on the report that a rich strike had been made in the new shaft, hardened, and remained buyers. Simmers have not moved. Union Corporation stocks and General Minings have been featureless. The Anglo-American Group remained remarkably steady. Brakpans are still being bought. Anglo-Americans have been weak, with diamonds. It is said that there is a deal on between New Kleinfonteins and Brakpans, and there have been inquiries for Kleinfontein shares in consequence. Wit Deeps have been a steady market. It is said that this mine is slowly working itself into a better position. The diamond market has been weak and irregular. West Ends fell back at one time, but have since recovered, on a little buying. Crown Diamonds are expected to do well as soon as the plant is started up fully. New Elands have been firm. The business in Consolidated Diamonds has been disappointing. Transvaal Platinums, a new venture, have been sold at 50s. The shares are 5s. each, and the rise is attributed to the absence of information and the scarcity of the shares available. Investment stocks have had the usual quiet business. There have been very few sales of Reserve Banks, and some shares are offering. Nationals remain around £6. Loans have been featureless. Almost none of the prices made during the week are a fair criterion of the state of the market. There has been no general dealing, and the position must remain so until some lead comes from the oversea investor. It must not be forgotten, however, that at to-day's prices South African mining shares present great attractions for the speculator and for the investor, and the position cannot remain dormant too long without drawing general attention to the potentialities of this market. The stagnation here is not unique, as the position is exactly the same in all of the oversea markets, due to the general malaise of the financial world at present.

	Fri. 27th.	Sat. 28th.	Mon. 30th.	Tues. 31st.	Wed. 1st.	Thurs. 2nd.
Anglo Am. Corp.	21 9	21 9	22 0	21 9*	21 9	21 9*
Apex Mines						0 6*
Brakpan Mines	56 6	56 3*	57 0	56 0*		56 1
Brick and Potteries		4 0*	4 0*			4 0*
Bushveld Tins	0 3*	0 3*	0 3*		0 3	0 3
Cinderella Cons.	—	—	—	3 6†		
City and Suburbans					3 6†	
City Deeps	50 0	50 0*	50 3	50 0*	50 0	50 0
Clydesdale Colls.	17 3†	17 3†		17 3†		17 3
Con. Diamonds	20 0	19 6*	19 9*	19 3*	19 3	19 3
Con. Main Reefs	8 9†	8 11*	8 9*	8 9*	8 11*	8 11*
Coronation Colls	—	—	25 0	20 0†	—	
Do. Freeholds	—	0 5	0 5	0 5*	0 [illegible]	—
Do. Syndicates	1 9†	1 3*	1 6	1 6	1 [illegible]	1 3
Crown Diamonds	6 7*	6 9	6 10	6 9	6 8	6 8
Crown Mines	17 6*	17 9*	17 6	17 9	[illegible]	[illegible]
Daggafontein Mines	2 3*	2 3	2 2	2 2	2 0	2 2
Durban Rood. Deeps	15 0*	—	14 9	14 6*	—	14 6
East Rand Coals	1 1	1 1	1 1	1 0*	1 0*	1 0
East Rand Deeps		0 6			0 7*	0 7
East Rand Minings		—	10 0†		—	
East Rand Props.	4 9	4 9	4 10†	4 9	3 10*	4 4
Eastern Golds	0 4	—				
Ferreira Deeps	—	—			6 0*	
Frank Smith Dmds	3 0	3 1	3 0*	3 0*	3 0*	3 0*
Geduld Props.	59 0*	59 3	59 [illegible]	59 0	58 9	58 6
Geldenhuis Deeps	—	4 3				
Glynn's Lydenburgs	13 9	13 3*	14 0†	14 0†	13 6*	
Govt. Areas	112 0*	112 6	112 0	112 0	111 0	110 6*
Hume Pipes	8 0*	8 0*	8 0*	8 0		
Lace Props.	7 6*	7 6	7 6*		7 6	
Langlaagte Est.	21 11	21 9	22 3	22 3*	22 3	22 3
Leeuwpoort Tins	4 6	4 3	4 6*	4 0	4 3*	4 0*
Lydenburg Farms	3 0†	2 6*	2 6	2 6*	2 9*	3 0
Middelvlei Est.	1 0*	1 0	1 0*	1 0*	1 0	1 0*
Modder B.'s	22 7*	22 9	23 3	23 0	22 7	22 10
Modder Deeps	39 6*	39 9	39 9	39 9*	39 6*	39 6*
Modder Easts	5 9*	5 9*	5 9	5 6	5 6*	5 8
National Banks	120 0*	120 0*	120 0	—	120 0	120 0*
New Eland Dmds.	38 0	37 6*		37 6*	37 0*	37 0*
New Era Cons.	6 10*	6 10*	6 10	6 9*	7 0†	6 10*
New Geduld Deeps	0 6*	0 6*	—	0 6*		
New Kleinfonteins	4 6	4 6*	4 7*		4 6*	
New Modders	77 9	77 6*	77 6	77 6*	77 0	76 9
New Primore	3 0*	3 6†	—			
New State Areas	31 0	31 6*	32 0	32 3	32 6*	31 6*
Nigels	6 0*					6 0*
Nourse Mines	13 10*	13 10	13 9*	14 3†	13 9	13 6
Pretoria Cements	37 3†	37 3†	36 3*	36 0*	37 0	36 6
Rand Nucleus	1 0*		1 0	1 0*	—	1 0*
Randfontein Centrals	12 0†	11 0		11 0*	11 6†	
Do. Estates	19 0	18 10*	19 0	18 10	18 6	18 9
Rouxville Diamonds	1 0*	1 0*	—	1 3†	1 3†	1 3†
Roberts Victors	7 0†	6 9†	6 0†	7 0†		7 0†
Robinson Deep "A"	31 9*	31 9	31 6*	31 6	32 5†	
Robinson Deep "B"	14 3	14 1½	14 1	13 9*	13 6	13 6
Rooibergs	3 0	2 10*	3 0*	3 0	3 0†	3 0*
Ryan Nigels	1 0†		1 0†	1 0†	1 1†	
Shebas			2 0*	2 0		
Simmer and Jacks	2 10	3 0	2 11	2 11	2 10	2 10
S.A. Breweries	29 3	30 0*	30 0*	30 6	30 0*	30 6*
S.A. Lands	3 1	3 1*	3 0	3 0*	3 0*	3 0
S.A. Reserve Bank	£131†	£132†	£132†	£133†	£131†	£131†
Springs Mines	15 3	15 3*	15 3	15 0	15 0	14 9*
Sub Nigels	10 1½	10 6	10 7½	10 6	10 1½	10 9
S.A. Alkali	10 7*	10 6*	11 0	10 6*	10 6*	11 3†
S.A. Townships	10 3*	10 3*	10 3*	10 3*	10 3	10 6*
Transvaal G.M. Est.	8 3*	8 6			8 9	8 9*
Transvaal Silvers	13 6	13 6*	13 6	13 6*	13 6*	13 6*
Tudors	-					0 6†
Union 5 per cent.	£101*	£101	£101*	£101†	£100*	£100
Van Dyks	1 0†	0 9	0 11	0 10*	0 9	—
Van Ryn Deeps	63 3	62 9		62 6*	62 6*	62 6
Van Ryn Estates	13 9†	13 0	13 0*	12 9*	12 9	12 6*
Village Deeps	11 3*	11 3*		11 0	10 9	11 0*
West Springs	19 6*	19 6*	19 4	19 3*	19 1	19 3*
West Rand Cons.	4 6†	4 6†	4 6†			
Western Rand Est.	—	2 0	2 0	—	—	2 6†
Witwatersrands	13 3*	13 5		14 0		
Wit. Deeps	13 1*	13 1*	13 3	13 9	13 6*	13 6*
Zaaiplaats Tins	4 9*	4 6*	4 9	4 6*	4 9*	4 9

* Buyers.   † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

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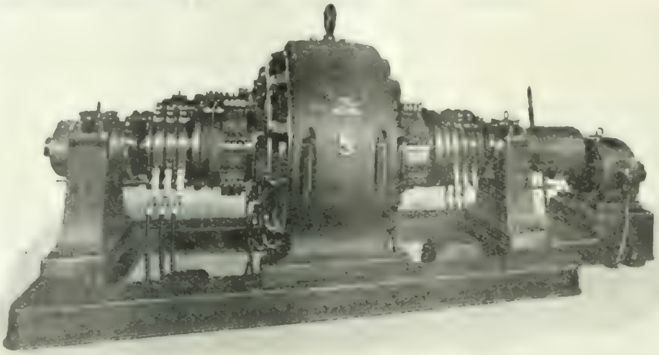

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TOPICS OF THE WEEK.

The Barrage Opening.

The official opening of the Vaal River Barrage has been fully reported in the daily papers, and nothing remains but to record some of the features of the several important speeches made on that occasion. H.R.H. the High Commissioner's speech contained a notable tribute to the importance of the mining industry as providing the basis of the prosperity of the Rand and the whole country. The Minister of Mines was also very happy in his reference to the possibility of developing the irrigation side of the Vaal River, and Sir Thomas Smartt made an interesting pronouncement on the same subject. To the Chairman of the Rand Water Board, Mr. Purchas, and to the Chief Engineer, Mr. Ingham, was, however, left the chief business of setting out the use and magnitude of the work and of giving credit to those who had helped to bring it to fruition. In the course of his speech H.R.H. Prince Arthur of Connaught said: "In a country like South Africa, which is visited alternately by drought and deluge, conservation becomes a vital necessity. It is a country that is developing rapidly, and the construction of a work of this magnitude represents a vigorous forward plunge in an otherwise uniformly rapid progression. We in South Africa cannot afford to conform to the cautious methods adopted by countries that have been comprehensively exploited, or that are nearing the expansion limit. We have an almost boundless horizon in front of us, and we have to adapt our vision to suit it. We have to look a long way ahead, and even when we can see no further we may legitimately dream of a still greater future which is momentarily beyond our gaze. Let us therefore do things on as grand a scale as our finances will permit. It is fashionable to criticise the mining industry without regard for the great and vital part it has played, and continues to play, in the development of this land. The barrage which we are opening to-day owes its existence to the mines, and for the matter of that the municipalities of the Witwatersrand to some extent owe their existence to the mining industry. The mines absorb to-day nearly half of the available water in the reservoir. But there are people who tell us that the days of the mines are numbered. I sincerely hope, for the welfare of South Africa, that that prediction will not be fulfilled for many years. Before that time comes we may have developed many other industries, but we will always have cause to be grateful to the Rand Water Board and to our mines for this imperishable and essential bequest which they have set up on the reef of South Africa for the benefit of the people of the Union."

The Chairman's speech detailed the history of the Board's activities since its inception, and supplemented the quotations from the Chief Engineer's brochure, from which we quoted last week. "The completion of this first instalment of five million gallons a day from the Vaal River," Mr. Purchas pointed out in conclusion, "will mean an immediate addition of nearly ten million tons of water a year available for supply. This water will have to be pumped a distance averaging about 15 miles, against a total head of nearly 1,500 feet. If the whole of this new supply is required by Johannesburg and the Reef, in addition to our existing supplies—by no means an extravagant assumption—the Water Board pumps would be lifting annually a volume of water representing a tonnage fully 20 per cent. in excess of the weight of ore from which the entire annual output of gold is produced. Moreover, the whole of that vast weight of water, to ensure its delivery over the Board's limits of supply, would have to be lifted to heights varying between three and four times the height of the cross on the Dome of St. Paul's. I hope these illustrations have not been tiresome; in any case, they will have served to show the magnitude of the work involved in providing that whenever a household or industrial tap, anywhere between Randfontein and Springs, is turned on, night or day, it shall not fail to supply its quota of the vital needs of the consumer."

Sir Julius Jeppe, Mr. Ingham, Sir Thomas Smartt, and the Administrator of the Transvaal all made interesting contributions to the day's eloquence, and it says much for the care and thought devoted to the planning of the arrangements that they went off without a hitch.

The Standard Bank Meeting.

The cabled summary of the Chairman's speech at the annual meeting of the Standard Bank makes very interesting reading. Lord Selborne, who presided, seems to have spoken very fully and frankly on the position of banking generally in this country. He referred to the depression in trade, which had been world-wide in extent and unexampled in severity. He said the experience of the National Bank of South Africa, as explained by Mr. Leisk, was one of the consequences of this depression, and he extended cordial good wishes for the prosperous future of the National Bank. He regretted that the period of depression was not passing away, and the signs for the approaching winter were not good, either in Africa or Europe. He was convinced that this was owing almost entirely to the unsettled state of Europe. The Governments in Britain and the Union had met the crisis with courage and a determination to economise.

Referring to the customary announcement in the balance sheet that full provision had been made for bad and doubtful debts and contingencies, the Chairman said: "It is a matter of general knowledge that business conditions in South Africa for the last two or three years have necessitated more than ordinary anxiety, and this bank, in common with all other banks the world over, has had to face losses more or less severe at recurring times. The consequence of these is seen in the board's recommendation of a dividend at the rate of 11 per cent. per annum, without on this occasion the 2½ per cent. bonus which has been paid in recent years." Lord Selborne proceeded to review the South African returns for 1922 and gave details in connection with the most important of South African and East African industries. He said there was reason to believe that the stocks held in the Union at present were by no means excessive. It could not be denied that the gold industry stood on a more stable basis to-day than at any time during recent years. The manner in which the large quantities of gold was handled by the Rand refinery reflected the greatest credit on all concerned. The establishment of sales of diamonds in the early part of the year was particularly satisfactory, but more recently a not unexpected falling off had been witnessed. The outlook for the diamond industry in South-West Africa had improved.

On the subject of exchange rates the Chairman said: "The South African exchange rates have been higher during the year than we like to see them. Twelve months ago we charged 1½ per cent. for telegraphic drawings on South Africa, and this rate steadily increased until December, when it reached 3 per cent. Since then it has been reduced from time to time as the trade position altered, and has now returned to the level of a year ago. I need hardly remind you that these rates depend entirely on the balance of trade with South Africa and our cash position as a result of such trade. If exports from South Africa are temporarily in excess of imports, the financing of such trade will result in adding to our cash position in London, to the detriment of South Africa. This flow of funds from South Africa to London, if continued beyond what may be regarded as the safety limit, makes it necessary to ship gold to South Africa. To do this at the present time would cost the banks about 6½ per cent., whereas the charge to the public for telegraphic transfers on South Africa is 1½ per cent. When our rates reached their highest level early in 1920, and we were charging 8 per cent. for telegraphic transfers on South Africa, we were actually shipping gold from London to South Africa at a cost to the bank of over 25 per cent. Conditions, therefore, justified much higher rates than we charged, but the banks endeavoured to keep the rates as low as possible, and to adjust the position gradually, with the object of avoiding, as far as could be, the embarassments which violent fluctuations would have caused to trade. We are anxious to see the rates reduced to the normal level, and we hope that the trend of South African trade will soon allow of this being done."

Publicity for S.A. Industries.

In several directions, South African industries have enjoyed unwonted publicity of late. The optimistic speech made last week by the President of the Transvaal Chamber of Industries, the efforts now being made to use the Empire Exhibition of next year as a big impetus to the cause of our industries; and the publication of an exhaustive annual report by that indefatigable body the National Union, all have combined to give a well-deserved fillip to our industries. On the top of these comes an opportune publication from the Publicity Department of the Railways entitled "Industrial Prospects of South Africa: A Country of Growing Possibilities." This book has been compiled by the Department of Mines and Industries, but in collaboration with the South African Railways and Harbours Administration, and in a preface the compilers say that "South Africa is steadily coming to the front as a manufacturing country." The publication under notice has been prepared with the desire to bring home to investors, manufacturers and business men generally the manufacturing possibilities of the Union of South Africa. It treats with South Africa as a manufacturing country with its illimitable resources, transport facilities and geographical advantages, power and water availability, wild and farm products, fishing industry, its innumerable other industrial concerns and industries of importance, a statement on the labour position in South Africa in relation to industrial progress and expansion. The book endeavours to describe the economic foundations upon which the South African nation of the future will be built, based upon a policy of the local utilisation of the country's raw materials, as the basis of manufacturing operations. As the publication bears the imprimatur of the Government, we can take as conveying actual Government policy the statement in its pages that "the attitude of the Union Government towards industrial development is one of active assistance in every direction that seems likely to bring good results." Emphasis is laid upon the extent and adequacy of the Union's transport facilities—11,500 miles of Government controlled railways—and there is a full appreciation of our geographical advantages as an exporting country commanding the world's trade routes. "Capital, energy, and enterprise, backed by imagination, are the essentials of progress; given these, there is little that the Union may not accomplish industrially."

Notes & News.

" MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

* * *

Petroleum.

In this issue there appears the fourth and last article of a series on " South Africa and the Petroleum Problem," which have been contributed by an engineer who has studied the question for many years, and investigated pretty well every oil indication of importance in the Union and adjoining territories, at one time or another. It is hoped by means of these articles to draw public attention to a matter that should be of considerable interest to everyone in this country. That the articles have not escaped notice seems evident from the fact that rumours have already reached this office to the effect that a gusher has recently been struck in Portuguese East Africa. It has not been desired to stimulate the imagination of any one to this extent; the intention has been to discuss possibilities from a sane and reasonable point of view.

* * *

Cape Asbestos.

The profit of the Cape Asbestos Company for 1922, after providing for taxation, bad and doubtful debts, and including income from Capamianto S.A.I., Turin, was £13,840, plus £9,422 brought in, making £23,262. After placing to reserve (thereby increasing that fund to £63,525) £5,000, directors recommend dividend of 10 per cent., less tax, on Ordinary shares and dividend to Preference shareholders of amount equivalent to dividend, less tax, on Ordinary shares, carrying forward £5,504. Full mining operations in South Africa were resumed towards close of the year, and have since been maintained.

Representation for Canadian Manufacturers in South Africa.

The Canadian Assistant Trade Commissioner has been requested by one of the largest Canadian manufacturers of iron-working machinery, lathes, presses, punching and shearing machines and small tools and gauges to secure suitable representation for them in the Union of South Africa, and the Trade Commissioner would be very glad to hear from firms who would be interested in entertaining a proposition of this nature.

* * *

Henderson's Estates.

The net profit of Henderson's Transvaal Estates for year ended 31st March, 1923 was £4,213, plus £24,305 brought forward, making £28,517. Directors have utilised £4,720 of reserve for depreciation in investments, in writing off depreciation in stocks and shares and recommend that balance of £28,517 be carried forward. Reserve will remain at £15,000 (exclusive of balance of £20,279 specially allocated for depreciation in investments) and in opinion of directors this is ample to meet any future difference which may arise between the sum at which the assets are valued in the books and price at which they may be realised.

* * *

Ohlsson's Cape Breweries.

The report for year to March 31 states that the profit after charging working expenses, repairs and maintenance to freehold and leasehold properties, and after providing for bad debts amounts to £92,023, and transfer fees £90, making, with the amount brought forward, £6,581, a total of £98,695. After deducting usual charges, dividend on First and Second Preference shares, and providing for depreciation of plant, a balance is left of £38,331, out of which it is proposed to pay a dividend of 5 per cent., less tax, on the ordinary shares, carrying forward £12,081. The directors have reason to hope that improvement may not only be maintained, but increased during the current financial year.

* * *

Where Our Gold Goes.

"The Times" points out that on analysis of the distribution of African gold sold in London for the first six months of the year shows that India took £12,751,000, being nearly 60 per cent. of the total shipments, while only 5½ millions, just over 25 per cent., went to New York. "The Times" further says that a most interesting movement is the sale of nearly three millions to Continental purchasers, representing nearly 14 per cent. of the total production. It would appear from the Board of Trade returns, however, that the latter purchases were made chiefly for making payments to countries outside Europe, as the actual shipments of gold to Europe totalled only £358,000 of which the Netherlands took £263,000. "The Times" expresses the opinion that, although under a modified arrangement, producers will next month be free to ship gold to other places besides London, the bulk of the South African gold will probably continue to be sent to London and realised there. Settlement in any case will be made in London as no exchange market for the rupee exists in South Africa. The Transvaal Chamber of Mines annual report shows that the average market price of gold sold during 1922 was 93s. per fine ounce for 7,683,719 fine ounces of South African gold. The gold was disposed of as follows:—New York, 4,491,981 ounces; India, 2,846,015 ounces; East Africa, 249,249 ounces; Egypt, 8,375 ounces; Continent, 177,993 ounces; Trade, 73,997 ounces; Straits Settlements, 84,606 ounces; West Africa, 503 ounces. It is not possible to show separately the disposal of the Transvaal output; further it is not possible to calculate the exact average market price of gold produced during 1922, owing chiefly to uncertainty as to the date of realisation of any particular consignment. The estimated price realised for gold produced during the calendar year is 92s. 3d. It has been calculated that the total premium from the beginning of its operations until March 31st amounts to approximately 25½ million pounds for Witwatersrand production.

The Prime Minister and the "Black Basis."

The following very pithy comment is from the last issue of "Umteteli Wa Bantu": "The Prime Minister last Saturday evening attended the annual dinner of the Chemical, Mining and Metallurgical Society at Johannesburg, and spoke on the labour position. He said: 'Do not let us continue to cry as we are doing for more and more black labour. Every other industry is doing the same. The young industries of the Union are also starting very much on a black basis.' We have a great regard for General Smuts. We try to follow and to understand him so that we may form some idea of the inwardness of his Native policy. It is a study that complicates us, and we seem to know no more of the Minister's real views on Native affairs than we did. But the "black basis" is a matter to which we have given considerable thought. We claim to know something about it, and without trying to pierce the clouds which envelop General Smuts and contribute to our obfuscation we can state three solid facts: It is the "black basis" that makes possible the white standard in this country. Without the "black basis" the industries of this country would dwindle and die. Without the "black basis" the poor whites of this country would continue to be the unemployables they are."

* * *

New Transvaal Chemical Improvement.

Taking all things into consideration the report of the New Transvaal Chemical Company, to June 30, makes quite a satisfactory showing, the decline in the previous year's profit having been nearly made good. The total comes out at £77,036, as compared with £70,567, but the dividend is maintained at the lowered rate of 15 per cent., which enables the carry forward to be raised to £10,590, as against £6,254 brought in, whilst depreciation allocation is also slightly increased. Many changes are to be noted in the balance sheet, the chief of which comprise reductions in creditors by no less than £164,000; in debtors by £55,200, and in stocks by £98,750. The position is therefore much more liquid, although bank advances figure at £166,000, an increase of £36,974, which is offset by additional investments in associated concerns to the amount of £47,900.

* * *

Trades and Industries Exposition.

The Johannesburg Y.M.C.A. is organising an enterprising scheme under the title of the S.A. Trades and Industries Exposition and Fête, to be held for one week from Monday, October 29, to Saturday, November 3, inclusive. The object of the effort is to give to the citizens of Johannesburg and to visitors from other parts of the Union a practical demonstration of the trades and industries of their own country, to show and sell South African products to South African people in a way which will foster a deeper community spirit and at the same time help forward the work of the Johannesburg Y.M.C.A. The whole of the commodious premises of the Johannesburg Y.M.C.A. will be thrown open for the Exposition and Fête, and every manufacturer in the Union is invited to give a supply of his specialities for exhibition and sale, together with show cards and posters advertising his products. The widest publicity will be given to the goods sent in, and, if desired, contributing firms may send a representative to display and sell the goods. The results of the Exposition and Fête will be twofold. Firstly, donating firms will get effective advertisement for their goods; and secondly, the funds of the Y.M.C.A. will benefit considerably. It is anticipated that thousands of people will pass through the Exposition during the week. In addition to the advertising matter supplied by the firms themselves, a special invitation will be given to the local merchants and storekeepers to visit the Exposition before the public are admitted. All goods for sale will be marked in plain figures and will be sold at retail prices. The floor space for the Exposition will be approximately 8,500 square feet, and it is intended that the larger portion of the space may be utilised for the display, advertisement and sale of South African manufactures and products.

Real Estate Corporation of South Africa.

[illegible] interim [illegible]

* * *

Union Minière.

[illegible] the President, [illegible] A principal feature of the [illegible] which is highly [illegible] 43,362 tons [illegible] 1921. Substantial [illegible] proceed with [illegible] with, and also the extraction [illegible] in Belgium, [illegible] 15,000,000 frs. [illegible] 20,000,000 frs. The [illegible] 1,800 tons, and the first six months of 1923 [illegible]

* * *

Gold Mining Profits.

[illegible] the Rand, [illegible] dividends, [illegible] It is interesting [illegible]

* * *

A Lesson From Rhodesia.

[illegible] in the world [illegible] just under £150,000 [illegible] In 1922 the working costs of this company [illegible] differs [illegible] recurrence [illegible] Witwatersrand the [illegible] working depth [illegible] 2,500 feet [illegible] of cheap [illegible] on the Witwatersrand instead [illegible] which only yield [illegible] but this great [illegible]

* * *

Rhodesian Mining Activity.

[illegible] Bembesi [illegible] claims acquired [illegible] Marks group are [illegible] rich leaders [illegible] A [illegible] The last output [illegible] high value being found on [illegible]

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ENGINEERING SECTION.

Sugar Machinery: The Mauss Centrifugal Separator.[†]

By the Right Hon. Lord Invernairn.

The association between cane sugar manufacture and engineers has been long and of continuous growth. Its importance to-day may be gathered from the progress shown by the history of the sugar industry. Developments and improvements due to engineering have largely increased the quantity and quality of sugar which can now be extracted from sugar cane.

In early times the machinery in use was crude, and one may take it that by 1800 it would be, on the whole, like the [illegible] now in use. As time advanced the process of manufacture has been divided into stages. At first there were only two stages, namely, juice extraction and concentration with skimming. Now there are several stages, including the after treatment of syrups, and these can be indicated most easily by naming the principal machines used, namely, mills, clarifiers or subsiders, mud subsiders, filter presses, evaporators, vacuum pans, crystallisers, centrifugals.

As only a rough survey of the progress of the industry is attempted, descriptions of plant and process are taken at intervals of twenty years, starting with 1800. The results of the survey are embodied in a table.*

The author then considers improvements in methods and machinery. The fact that, with even up-to-date machinery, over 10 per cent. of the sucrose in the cane is lost as sugar shows, he remarks, the opportunity and scope for further improvements. The reduction in the loss in mill extraction to only 5 per cent. involves the use of about 18 per cent. maceration on weight of cane; but this added water in the juice calls for extra fuel to the extent of 10 to 15 per cent. expressed as bagasse. Still more extra fuel is required with 2·5 per cent. loss in mill extraction, as the dilution of juice is in that case about 30 per cent. So far it has been assumed that the juice is uniform in quality irrespective of the number of mill rolls employed. In reality the quality deteriorates with each additional crushing of the bagasse.

The actual amount of impurities removed by clarification is very small. As the amount of inversion of sucrose in a modern factory is very small indeed, the final molasses may be considered as the concentrated glucose and impurities in the clarified juice, together with sucrose held in solution by the water of the molasses or prevented from crystallising by the impurities. Such impurities consist of lime salts of organic and mineral acids, and gummy matters originally in the juice or formed by the hydration of cane fibre particles. These fibre particles are the direct consequence of the repeated crushing of the bagasse, and are so small that they escape through the finest screens used; persisting throughout all the stages of manufacture they appear in the molasses, and in the sugar, still recognisable as fibre particles, but altered somewhat through being partially dissolved away.

The elimination of these particles from the juice is perhaps the most serious problem at present before sugar manufacturers. The juice in Hawaii is more pure than that in Cuba, and the sugars more [illegible]; but while the Cuban sugars are freely accepted by refiners, Hawaiian sugars are objected to partly on account of irregular-sized crystals and partly because of the trouble they cause in treatment after being dissolved. The cause of the difference may be taken chiefly that the more crushing in Hawaii reduces the fibre to smaller particles [illegible] in Cuba. Removal of the cane particles would contribute to reduce the quantity of molasses produced by less gummy matter being formed and more sugar would crystallise. Straining of the juice has, so far, been insufficient to overcome the difficulty, and a remedy is wanted. This may perhaps be found through the application of knowledge developed in some other branch of industry.

Much has been done in the study and progress of means for separating the clarified juice or scums from the solid impurities, but the results still leave room for research by the mechanical engineer. In the usual process of juice clarification for the manufacture of raw sugar, after the juice has been passed through finely perforated strainers it is heated to about 212 deg. Fah. and then into tanks where a small proportion of lime cream is stirred in, sufficient to make it slightly alkaline [illegible]. Thereafter the juice is allowed to settle and the clear portion decanted to the evaporators. The remaining mud amounting to 10 to 12 per cent. of the total contains sand, particles of cane fibre, coagulated albumin, cane wax, lime salts and other impurities, and is generally collected and pumped into filter presses to recover as much as possible of the adhering juice.

In some cases the mud is mixed with the dilute juice from the last mills, again heated and settled in [illegible] tanks so as to obtain a more concentrated mud amounting to 5 or 6 per cent. of the total juice, and this mud is returned on the bagasse intermediately [illegible] feeding to one of the last mills, the object being to recover the [illegible] juice and leave the solids in the bagasse.

In many factories a different procedure is employed, where the strained juice is limed cold, then pumped through heaters under pressure so that its temperature is raised to 220 deg. to 230 deg. Fah. without ebullition. The juice is then under a pressure at least as great as that of steam at the corresponding temperature, and both temperature and pressure must be reduced before the juice can be sent into the open settling tanks. The common method employed for the reduction is to pass the juice through a counter-current tubular cooler, where the surplus heat is taken up by cold juice on its way to the high-temperature heaters, and a loaded relief valve is used on the [illegible] to let down the pressure. The advantage of the high temperature method is that the coagulated matter is of harder or denser consistency than when low temperature is used. In both methods [illegible] through the aperture of the relief valve [illegible] the proper settling is hindered [illegible] in both cases.

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* Not reproduced.—Ed., S.A.M.E.J.

† Abstract of Paper read before the Institution of Mechanical Engineers.

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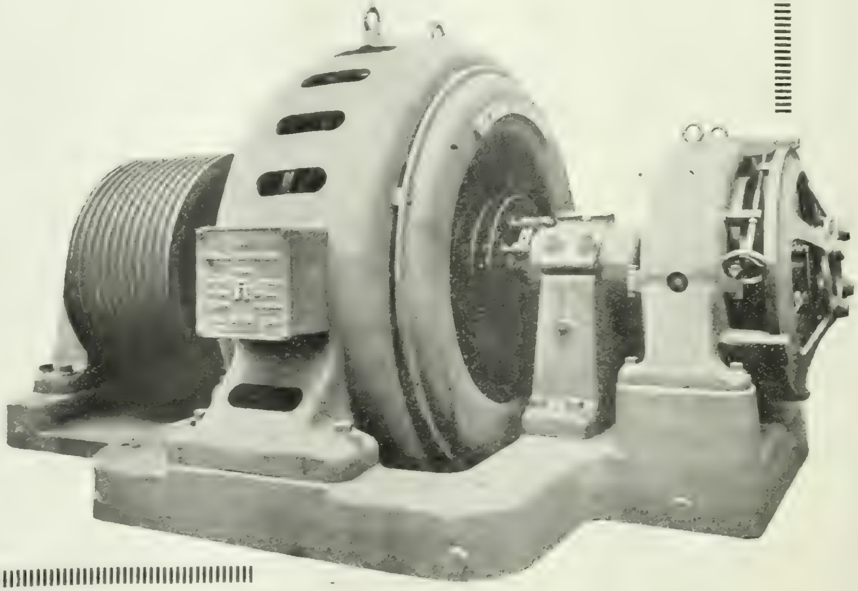


is practically the same, although the high temperature method should be superior. The latest method of clarification takes the strained raw juice from the mills and passes it through continuous centrifugal machines of the decanting type, which separate and catch the sand and fine bagasse particles that have escaped through the fine strainers at the mills, also cane wax and other impurities lighter than the juice. The juice, almost completely freed from suspended solids, overflows and is conducted away for further treatment.

The "Mauss" centrifugal separator consists of a series of conical drums which revolve horizontally on a vertical spindle running on two sets of ball bearings. The spindle is hollow and contains an internal spindle which is attached at its top end to a hydraulic piston, and at the bottom end operates toggle levers to open and close the drum sections. This movement of opening and closing is controlled by a timing gear, adjustable to give the cycle of operations required for the material treated.

The machine is maintained in continuous full revolution. The liquor flows into the bottom conical drum and overflows upwards into all the conical drums. Centrifugal force moves the solids and heavier particles through the feed outwards, towards and against the periphery of the conical drums, leaving a resulting clear liquor flowing upwards and over the top lip of the drums into a suitable launder. The separation collects the solids to the quantity desired. The timing gear sets in motion the action of the toggle gear and the drums are then opened and closed. The feed is automatically cut off before opening, and the solids collected are instantly discharged by centrifugal force. At closing, the flow of feed is automatically turned on. Before opening, wash water may, if desired, be run in to displace all the clear liquor. The solids discharged from the conical drums are received in a stationary outside casing, and fall to a suitable gutter or conveyor. The machine works continuously and all operations are entirely automatic. Drive is by belt from a motor or other prime mover, the speed of the separator being from 800 to 1,000 revolutions per minute.

After leaving the separator the juice is sulphured, limed, and then heated under pressure to 220 deg. to 250 deg. Fah., the heating being finished preferably by injection of steam in a heater designed after the manner of a counter current jet condenser. In this way the highest temperature of the juice is attained very rapidly and can be kept constant without danger of overheating. The steam is supplied through a reducing valve set to give the temperature desired. On leaving the heater the juice flows through a tubular cooler with a counter current of cold juice to take up the surplus heat, so that the juice may leave the cooler at about 212 deg. Fah.

In ordinary clarification the mud consists of at least three portions: the sand and other heavy material, which settles very rapidly; the coagulated albumin and part of the gums in combination with the added lime, which settle slowly; and the cane wax with minute quantities of other light material, which remain floating. A small part of the impurities is of a fatty or waxlike nature and combines with part of the lime to form a soap or emulsion, and the effect of the wax and this soap is to render filtration in the presses difficult, as these matters clog the pores of the filter cloth very rapidly.

In this new method the mud consists almost entirely of the coagulated albumin with the lime salts formed during heating, and this may be treated either in the ordinary filter presses or in a new type of continuous centrifugal separator. The foreign patents for that centrifugal are not yet completed and particulars cannot at present be published.

With this system of clarification there are the following advantages:—

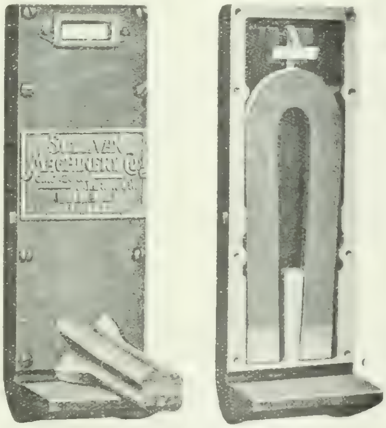
The fine particles of cane fibre are removed from the juice before liming or heating, so avoiding the extraction from them of gums or colouring matter. The cane wax also is removed, avoiding the troubles it would cause through emulsification or saponification.

The subsider mud is reduced in quantity and is in such a form that it settles rapidly, there being no oily or fatty matter present, and the comparatively large flakes formed being unbroken in handling.

In reviewing the history of cane sugar and the close relationship between the progress of the machinery and the results achieved, while it is not possible within the limits of this paper to treat the matter in detail, the aim has been to promote and perhaps stimulate the interest of the engineer in an industry whose importance and value deserves his continued active co-operation.

The Sullivan Magnetic Indicator.

It is a well known fact that drill steel, in order to be tempered for the greatest possible toughness and resistance to wear, should be quenched at the lowest possible temperature above the critical point, which is the point of decalescence, or that at which the structure of the steel changes. It happens that this point coincides with that at which steel loses its magnetism, and the engineers of the Sullivan Machinery Company have taken advantage of this coincidence to design a magnetic indicator to assist the blacksmith in quenching his steel at the proper point. This indicator consists of a brass or bronze casing having a removable cover, and a common horseshoe magnet hung on a pivot at its point of balance. At the top is an opening or window and an indicator tab painted white which is so balanced that when the bottom of the magnet is impelled toward the top will strike a lever and throw the indicator into view. A shelf is provided at the bottom of the casing as a rest for the steel. The indicator is ordinarily set between the furnace and the quenching bath. When the blacksmith judges by the colour of the steel or by the temperature reading on the pyrometer that it is approaching the critical stage, he withdraws it from the fire and rests the heated end on the shelf at the base of the indicator. If the tab shows in the opening he knows that there is still some magnetism left in the steel and returns it to the furnace for further heating. If the magnet does not show the tab, he knows the steel is ready for quenching. The indicator is nine inches long by three inches in width by one inch in thickness. It weighs 4 lb.



The Sullivan Magnetic Indicator.

INDUSTRIES SECTION.

Salt and Soda Prospects.

RECENT DEVELOPMENT OF THE PRETORIA PAN—AN ENTERPRISE WITH MANY VICISSITUDES
LOCAL PRODUCT THAT MAY SUPPLANT IMPORTS—ATTEMPT TO MEET MINE REQUIREMENTS.

Salt and soda may not suggest to the uninitiated a very profitable field for exploitation, but they are, nevertheless, two most important commodities in which South Africa should be in a position to supply its own requirements independently of overseas sources. As a matter of fact, the Union is already almost self-supporting in regard to salt, but new calls are likely to arise and these will doubtless lead to considerable further expansion in the salt industry.

While the annual importation of salt approximates to 3,000 tons, the South African production has in recent years averaged between 70,000 and 80,000 tons. The bulk of this is made from the liquor of salt pans in the Transvaal, Orange Free State and Cape. It is mostly obtained entirely by solar evaporation in shallow dams, though in the case of one or two producers artificial heat has been adopted for final precipitation of the concentrated liquor. The coarse salt obtained by solar evaporation is subject to contamination from dust and has to be graded in course of recovery according to its apparent quality. A portion of the purest grade is subsequently ground fine for household and dairy purposes and put on the market in suitable form. The quality of this approximates to that of the European article.

Scope for Development.

Soda, however, although used in smaller quantities, holds out more promise of profitable development, and it is in this connection that recent activities at the Pretoria salt pan are of special interest. Before dealing with this it is worthy of note that while the production of soda in the Union in 1921 amounted to only 312 tons, it was twenty times as much six years earlier. On the other hand nearly £20,000 worth of soda was brought into this country last year and of this the Transvaal gold mines consumed nearly half. There is thus ample scope for developing local deposits of this comparatively valuable commodity.

There is (according to the Official Year Book of the Union) only one notable occurrence of soda in the Union—that at the Pretoria saltpan. This pan is a crater-like depression some 200 feet below the surrounding country, and about 28 acres in extent. The bed of the pan, from which in the dry season most of the liquid evaporates, consists of a black mud containing masses of trona, or solid crude carbonate of soda. Recent geological work has proved the pan to be an explosion crater, similar to those which have formed the diamond pipes, and of post Karroo age. The pan contains three valuable ingredients—saline mud (proved by boreholes to be at least 200 feet deep), layers of crystallised carbonate of soda, and saline liquor containing approximately 10 per cent. soda and 15 per cent. common salt.

Early Efforts.

In 1912 the South African Alkali Company started to work these deposits. For the first six years the soda only was worked, as that obviously gave the greatest immediate profit, and some 21,000 tons were won. The soda at the surface then gave out, and the Company turned its attention to the mud. So far (says the Official Year Book) it has been found impossible to treat this, as the liquor obtained by artificially leaching the mud will not filter, neither will the impurities settle in a reasonable time. In 1919 the original Company failed, but fresh capital was introduced and a plant erected to extract the soda and salt from the liquor. No attempt was made to treat the mud. An experimental plant, working on the liquor, gave quite satisfactory results. When it came to operations on a commercial scale, however, considerable difficulties were experienced. It was found impossible to obtain a pure product owing to the presence in the brine of soluble organic matter that could not be effectually eliminated. Funds being exhausted, there was no option but once more to suspend operations.

Boring to Soda-Salt Liquor.

At this stage, owing mainly to representations made by Mr. T. G. Trevor, Inspector of Mines, Pretoria, a campaign of boring was begun, with the object of exploring the pan deposits at depth and gaining more definite information with regard to the available reserves of soda, money for the purpose being provided by a syndicate of shareholders. This work bore excellent fruit by proving that beneath the outer part of the mud area of the pan the soda zone is underlain, at a depth of from 18 to 25 feet, by a permeable gaylussite-rich layer saturated with pure concentrated soda-salt liquor, free from dissolved organic matter; and that by shutting off the mud and surface brine by means of a suitable casing abundant supplies of this liquor could be obtained.

Boreholes were put down all round the edge of the soda excavations, and practically all of them were found to be capable of yielding large quantities of liquor which rose under its own pressure to within a short distance of the surface. The discovery gave the South African Alkali, Ltd., a new lease of life. Fresh capital, to the extent of £20,000 was raised, and Mr. E. H. Clifford Jones, who had been appointed consulting engineer, at once began to experiment on the liquor. As in the case of the surface brine, it was found that by lowering the temperature of the borehole liquor, which averages about 75 deg. Fahr. to 45 deg. Fahr., between 55 and 60 per cent. of the soda present crystallizes out as pure decahydrate, containing only about 1 per cent. of common salt.

Modern Plant.

It was resolved, therefore, to adopt practically the same process as had been evolved for the treatment of the brine, and so far as possible to use the plant already erected. As a result of experiments and practical tests, that plant was gradually modified and enlarged until it consisted of four refrigerating cylinders, four centrifugal separators, one steam jacketed remelter, one vacuum boiling pan, one filtering pan and one Merton calcining furnace. The machinery is for the most part electrically driven, power being supplied by a 150-h.p. cross-compound, non-condensing steam engine.

The refrigerating plant consists of a large tandem steam driven ammonia compressor, refrigerating chamber, etc. In the pan the various boreholes are equipped with electrically-driven dry well pumps, which deliver into two 4in. mains, discharging into sumps at the central pumping station. From these the liquor is forced by electrically-driven 3-throw pumps up a 6in. pipe line, to a storage reservoir with a capacity of 40,000 gallons; from this reservoir it gravitates through another 6in. main to the treatment plant.

The plant worked smoothly (states Dr. P. A. Wagner, in Memoir No. 20 of the Union Geological Survey, prepared last year for the Department of Mines and Industries), and an average of about three tons of calcined soda was produced per diem. As, however, the estimated capacity was 7 tons per diem and 45 per cent. of the sodium carbonate and the whole of the common salt were running to waste, the process could hardly be deemed a success. Moreover, on a production of three tons per diem operations were being conducted at a loss. It was decided, therefore, to enlist the assistance of Mr. H. R. Blumenberg, who had been appointed chemist to the company, and of Messrs. Clark and Partner, consulting engineers. Mr. Blumenberg had no difficulty in demonstrating that the whole of the soda and salt present could be recovered in a very simple manner. Briefly, his proposal was to extract 55 per cent. of the soda as hitherto, then 55 per cent. of the salt, and to mix the residual liquor, having now practically the same composition as the borehole liquor, with the liquor coming from the boreholes.

Increasing Capacity.

At the same time Messrs. Clark and Partner showed that by improving the circulation of the cooling-brine in the refrigerating cylinders, and adopting Mr. Blumenberg's process, which would mean the addition of a vacuum pan and salt centrifugal, the capacity of the plant could be brought from three tons of soda to ten tons of soda and 18 tons of salt per diem. The total cost of the alterations and additions to the plant were estimated at £17,000. It was also recommended that better housing, office and laboratory accommodation be provided, at a cost of £4,800. Unfortunately, the funds of the South Africa Alkali, Ltd., were by this time (August, 1921) once more completely exhausted, so that the recommendations could not be acted upon.

At this critical juncture, however, the South African Townships, Mining and Finance Corporation, Ltd., came to the rescue, with the result that operations have been resumed and are at present attended with the most promising prospects. So much so, indeed, that it is intended at an early date—possibly some time next month—to invite the shareholders of the Alkali Company to visit the property and witness the operations of the complete plant. Mr. Blumenberg has been appointed manager of the works and at present the concern is producing between four and five tons of soda a day, but it is anticipated that double this quantity will be produced in the near future, and the production of salt will increase proportionately. Ultimately it is hoped to add caustic soda to the production. The soda is of thoroughly satisfactory purity, and it is expected that the plant will eventually be able to supply this country's requirements. The Rand mines consumption has already been alluded to. That of other industries such as soap manufacturers will, of course, increase, as the industrial development of the country progresses.

Letters to the Editor.

THE CINDERELLA G.M. CO.

To the Editor, *S.A. Mining and Engineering Journal*

Sir,—Much prominence has been given to a proposal by Mr. D. C. Greig that the Cinderella should be financed by the Government to the sum of £500,000 at 5 per cent. with the object of re-opening and working the mine, the Government to have a first lien on the property. Mr. Greig omitted to state that in addition to the share capital of £1,159,450, there is a debenture issue of £500,000 at 5½ per cent., the interest of which is unpaid to date, so that the total amount of subscribed capital, together with accumulated interest, approximates £2,000,000. In the event of the Government agreeing to this proposal, what does Mr. Greig propose to do with the debenture holders? It is insisted by those who favour the scheme, that all risk is eliminated in view of the assets, such as ore developed, machinery and plant, and the rock values as indicated by the amount of gold actually won, this is probably so, but is it not obvious that if the investment is so sound a one for the Government it should be, at least, as attractive a proposition to those financially interested in the unfortunate venture to the extent of £2,000,000 sterling, which large sum might be recovered with the aid of the additional £500,000, notwithstanding that Mr. Greig says (rather unwisely, I think) "there is not much in the proposal from a shareholders' point of view." If this were true, there would be nothing in the proposal from any point of view. Judging from the correspondence in the Press, the restarting of the Cinderella would be of incalculable benefit to the country generally, to poor Boksburg in particular, and especially so to the shareholders, but the scheme should only be embarked upon after the fullest examination of the governing factors, such as reef, tonnage and values, condition of machinery and plant, and, not least, the assurance that the loan will be sufficient to bring the mine to the producing stage and that it will be used for that purpose only.

The proposal is reminiscent of the very wide demand, some years ago, that the State should, as a stimulus to private enterprise, open up a mine on one of the "Far East Rand" areas, but this was turned down. Had the Government been permitted by the controllers of the industry, or had it the necessary courage and patriotism to have made the experiment, it would have resulted in the finest advertisement of the Union's mineral resources. If one remembers rightly, Mr. Greig and his friends were among those who professed holy terror at the mere mention of State mining, and prophesied all sorts of blue ruin if the Government dared to develop its mining resources. Yet now, such is time's whirligig, these same gentlemen, and the same Press, are endeavouring to get public support for a scheme to direct public money to resuscitate a derelict mine which has been and will be directed and controlled by a "group," which, though "usually regarded as careful," is not by any means infallible. By all means let the scheme be adopted with proper safeguards for the new capital, but, if it meets with the success prognosticated by Mr. Greig, we shall claim it as a strong argument in favour of the State mining its own areas for the sole benefit of the State. Finally, a word of warning, should success not attend this proposed venture, it may well prove to be a calamity of the first magnitude in its effect upon the foreign investor, *verb. sap.*

Yours truly,

LEWIS WATKINS.

Johannesburg,
August 2nd, 1923.

Advocates of State ownership might peruse with advantage the note on the losses of the Australian Commonwealth Line, under "Ships and Shipping" in this issue.—Ed.

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TRADE SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS CONDITIONS STILL DULL—IRON AND STEEL, HERE AND OVERSEA—TIMBER AND BUILDING MATERIALS—AMERICAN TRADE CONDITIONS.

General.

In the course of this week a prominent commercialist, who has just returned from a visit to Durban, said things were beginning to buck up there, and, from all reports, business was improving considerably. Farmers are now getting returns for their crops, and they are proverbially generous in their purchases of agricultural implements when they have money in hand. My informant stated it was a great pity to see the number of ships in Port Natal lying there awaiting coal, which, owing to the Union's truck shortage, could not be supplied forthwith. It is distinctly up to the South African Railways to supply this much-needed want. Merchants in England would be only too glad to make up the deficiency of trucks, and a great loss in revenue to the Union is being caused by the delay of coal supplies, in addition to the bad name we are gaining. The important commercialist was much impressed with the actual position and potential possibilities of Port Natal, which, in his opinion, will soon be one of the finest harbours in the Union. The work done there during the past few years, he says, has been simply splendid, and indications are apparent that past efforts will be excelled in the near future.

Locally, business has been quiet during the past week. The engineering shops, however, appear to be pulling themselves together, and it is generally expected that they will shortly see a businer time; tenders for considerable contracts are now out, and future prospects appear to be very bright.

Business here, notwithstanding, is still waiting for some settlement of the European situation. Although no great hopes exist that the response of France and Belgium to the latest British Note will be of a satisfactory nature, and it would seem that the only course for Britain to pursue is to take the initiative. The present position is absolutely untenable, and something must be done to end the existing state of chaos. The moral support of the world, except France and Belgium, will, undoubtedly, be with her, and eventually even France herself will find it to her advantage to fall in line with British policy.

The building trade is progressing satisfactorily throughout the Union, and big activities are looked for during the next few months. Supplies of timber from the Baltic are now coming to hand, and there should be no shortages in any lines within a very few weeks.

A leading mining material importer this week said things were very quiet on the Commercial Exchange, as was natural at this time of the month. He did not look for any revival in business conditions here until some of the redundant caterers for the mines were weeded out.

Iron and Steel.

Engineering departments have this week been rather busier, with more inquiries than for some time past; but, generally, on the Commercial Exchange things have ruled quiet.

To-day's Prices.—Steel plates, 18, 16 and 14 gauge, 6 x 3 and 8 x 4, ⅛, 3-16 and ¼ in., 25s.; 10 x 5, 12 x 6, 26s., 5-16, ⅜ up to ¾, 8 x 4, 23s. 6d. to 24s. 6d.; larger sizes about 30s. a ton more; ⅞ and 1 in., 25s.; cheques plates, 27s. 100 lbs.; imported flats, ½ x 3-16, ½ x ¼, 30s. per 100 lb., ¾ x ⅛, ¾ x ¼ and ⅞ flats, 27s. 6d.; 1½ to 2½ flats, 25s.; larger sizes, 24s. 6d.; square iron, ⅜, 27s. 6d.; larger sizes up to 4 in., 25s.; ½ round iron, 26s. to 27s. 6d.; round iron, ¼ in. and 5-16, 28s. 6d.; ⅜, 7-16 and ½ in., 26s.; larger sizes to 4 in., 25s. (all Netherton Crown Brand). Imported mild steel flats, 23s. to 26s.; round, ¼ and 5-16, 28s. 6d.; ⅜ and 7-16, 26s.; ½ in., ⅝ and ¾, 25s.; ⅞ up to 7 in., 24s. 6d.; imported square mild steel prices same as the round; imported angles, ¾, ⅞ and 1 in. x ⅛, 30s. per 100 lb.; 1½ up to 4 in., 23s. 6d.; 5 and 6 in., 25s.; unequal angles, 1 x ½ x ⅛, 30s.; 1½ x 1 x 3-16, 28s. 6d.; larger sizes, 23s. 6d. to 26s.; steel joists, 23s. to 25s.; channels, mild steel, 24s. to 27s. 6d.; tees, 1 x 1 x ¼, 26s.; 1¼ x ¼, 1½ x ¼, 27s.; 2 and 3 in., 24s. to 25s.; bright turned shafting, ½ in., 6½d.; ⅝, 6d.; ¾ and ⅞, 5½d.; 1, 1⅛, 1¼, 1⅜, 5d.; 1½ to 6 in., 4½d. Local iron, in flats, rounds and angles, 22s. to 25s.; local mild steel, 22s. 6d and 23s. 6d. Round brass rods, ¼ in. and ⅜ in., 1s. lb.; ½, ⅝ up to 3 in., 11½d.; hexagon, 1s. lb. Naval bronze round, ¼ in., 1s. 1d.; ⅜ and ½ in., 1s.; ⅝ up to 5 in., 11½d.; hexagon, ½d. lb. extra. Copper rods, ⅜, ½, ¾ and upwards, 1s. 7d. Copper tubes, solid drawn, ¼ in. and 5-16, 2s. 9d.; ⅜, 7-16, ½ and 9-16, 2s. 3d. lb; ⅝ up to 4½ in., 2s. to 2s. 2d. Firebox copper, 1s. 9d. lb. Copper sheets, ⅜ up to 20 gauge, 1s. 8d. lb.; for lighter gauges 1s. 9d. lb. Brass sheets, ⅜ up to 22 gauge, 1s. 7d.; 24 to 28 gauge, 1s. 8d. Ingot tin (Lamb and Flag, 2s. 8d. per lb. Phosphor tin, 2s. 10d. per lb. Tool steel, 2s. 6d. to 3s. 3d.; drill steel, 4⅜d.; hollow, 8d.; 1¼ in., 6½d. to 8d.; spring steel, 7d. to 8½d. per lb.; bolts and nuts, hexagon, ⅜, 7 5-16d., lb.; ½ in., ⅝ and ¾, 33s. 6d. to 47s. 6d. per 100 lb.; hexagon nuts, ⅜, 8½d.; ½ in., ⅝ and ¾, 5d.; fish plate bolts and nuts, ⅜ in., 6d. lb.; ½ in., 4d. to 4¼d.; ⅝ in. and ¾ in., 3¾d.; dog spikes, 27s. 6d. to 32s. 6d. per 100 lb.; rivets, ¼ in., 6d.; ⅜ in., 5d.; ½ in., 4d.; and ⅝ in., 3½d.; wire nails, 23s. to 30s.; shovels, 27s. 6d. to 42s. 6d. doz.; wheelbarrows, 29s. 6d. to 47s. 6d.; picks, 32s. 6d. to 40s.; pick handles, 27s. to 30s.; hammer handles, 14 in., 4s.; 18 in., 4s. 9d. to 5s.; 24 in., 8s. 6d. to 10s.; 30 in. to 36 in., 10s. 6d. to 11s. 6d.; 42 in., 20s. 6d.; piping, ¾ in., black, 5d.; 1 in., 5⅞d.; 2 in., 1s. 2d.; galvanised, ¾ in., 5¼d.; 1 in., 7¼d.; 2 in., 1s. 7d.; ¾ in. steam, 5¾d.; 1in., 8d.; 2 in., 1s. 6d.; Stillson wrenches, 14 in. to 48 in., 56s. and upwards; barbed wire, "Shortthorn," 69 lb., 13½ gauge, 19s. 6d. to 21s. coil; plain galvanised fencing wires, No. 8 gauge, 100 lb. coils, 20s. 6d. per coil; No. 10 gauge, 100 lb. coils, 24s. 6d. per coil; No. 12 gauge, 100 lb. coils, 26s. 6d. per coil; fencing standards, 14 lb., 19s. 6d. per dozen; 12 lb., 18s. per dozen; black baling wire, 14 gauge, 19s. per coil, 100 lb.; 12 gauge barbed wire, 22s. per coil, 96 lb.; plain wire, No. 8 galvanised, 20s. per coil, 100 lb.; fencing standards, 21s. for 12's and 24s. for 11's; droppers, 22s. 6d. per 100; cyanide, 1s. 2d.; zinc shavings, 1s. per lb.; carbide, £28 per ton of 2,000 lbs.

Mail Advices: Britain: Iron and Steel: The Outlook.

The slight expansion in business noticed last week has been maintained, a little actual buying has developed from India; on the other hand, home consumers are taking little, as is generally the case at the end of the half-year. The position on the Continent has not altered, and it would appear that there is considerable danger of a fresh crisis arising in the Continental fuel situation. Apparently the coal and coke exported from the Ruhr consists chiefly of the stocks lying there, and very little is now being mined, so that in the not distant future the Continental steel industry is threatened with a return of the conditions which prevailed in February. Belgian works appear to be less affected than the French, and compete keenly for any business which comes into the market. There is, however, a firmer tone in their offers, and they are not so willing to make concessions as they were a short time ago.

Rather more active conditions prevailed at the weekly meeting of the Iron and Steel Exchange in mail week. There was a substantial amount of export inquiry, but the actual volume of business transacted was small.

Pig Iron.

Quiet conditions have ruled in this department. Prices have eased somewhat. English producers have but few orders on their books, and are compelled to put a proportion of their make into stock. It is generally considered that lower prices alone will induce buying, and, at the moment, the iron masters declare that their costs prohibit any further reduction. Midland No. 3 foundry is quoted at £5 7s. 6d.; whilst Scotch makers are asking £5 12s. 6d. English Midland iron has been offered at £5 10s.. Continental foundry continues to be quoted at £5 2s. f.o.b. Antwerp. There is practically no demand for basic iron, and Continental material is reported to have been offered as low as £5 7s. 6d.

Semi-Finished Materials.

Generally, the price asked for Continental billets is about £7 7s. 6d., with blooms and slabs at £7 2s. 6d.; wire bars £10 5s.—delivered works.

Finished Materials.

Steel bars £7 10s. f.o.b. Continental angles and tees have been quoted at from £7 12s. 6d. to £8 2s. 6d. British angles have been sold at £9 5s., and joists at £9 7s. 6d. German ¼ plates have been offered at £8 5s. English makers have reduced the price of 30 gauge black sheets £1 per ton, to £19.

South Wales and Ore Imports.

There was a heavy decrease in the imports of iron ore at the South Wales ports during mail week, the total quantity being 40,728 tons, against 53,264 tons the previous week. The total, disappointing though it be, was in excess of the weekly average for the year. There was a slight increase in the imports of partly manufactured iron and steel goods, the most important cargo being 600 tons of steel bars from Antwerp for the Melingriffith Tinplate Co. Another big fall in imports, at Swansea, has to be recorded of petroleum, the imports being only 2,462,770 gallons as compared with the recent weekly average of over 10,000,000 gallons.

Quotations.

Pig Iron.—Cleveland Foundry No. 1, 125s.; No. 3, 113s.; No. 4 forge, 107s.; mottled, 105; hematite, mixed Nos., 114s. Finished Iron and Steel.—Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £9 10s.; hard, £10 5s.; bars and angles, £10; tees, £11; joists and channels, £10 5s., sheets, singles, £13 15s.; doubles, £14 5s.; lattens, £15; plates, ship, £10 10s.; boiler, £11; rails, £10 10s.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots, fencing wire, 1 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by No. 1 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 19s. 6d. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 20s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 23s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 20s. 6d. per cwt. Bolts and nuts, 50 per cent. discount. Staffordshire common bars, 14s. 3d., and galvanised corrugated sheets, 23s. per cwt. Tin Plates.—Basis price, 20 by 14, 26s. to 27s.

United States: A New Lead Products Plant.

The North-West Lead Co., Seattle, proposes to erect a 300,000 dollar plant in the vicinity of San Francisco for the production of lead pipe, sheet lead, etc. The company produces approximately 50,000 tons of lead a year at its Kellogg smelter. The production of steel ingots in May, as returned to the National Federation of Iron and Steel Manufacturers, amounted to 821,000 tons, compared with 749,400 tons in April and with 462,300 tons in May, 1922.

Canada.

The production of pig iron during April (83,877 tons) was the largest for any month since November, 1920, and was 28.5 per cent. in excess of the production in March. The production of steel ingots and castings amounted to 92,598 tons. Companies supplying equipment and material for the railways and for heavy construction work, are all busy. The works of the British Empire Steel Corporation, the Steel Co. of Canada, and the Algoma Steel Corporation are working nearly at full capacity. The Canada Car Co., which has opened its rolling mill at Amherst, N.S., has on hand a Government order for 1,000 wheels, in addition to other work.

Germany: Changes in Steel Practice.

In the course of a review of changes, which have been necessary in Germany's steel-making processes, as the result of the war, the *Iron Age* states that there are three of outstanding interest—viz., an increased use of scrap, the substitution of open hearth for Besemer melting, and the displacement of French and Scandinavian iron ore. It is considered that good pig-iron and steel can be made from large charges of scrap. There is the further consideration that these charges mean production at a low cost, which may result in keen competition with British and American steel when economic conditions are normal and international relations more settled than at present.

Oils and Chemicals: Britain: The Position and Outlook.

Business in oils and industrial chemicals has been quieter during the past month. What demand there has been has lacked steadiness, fresh elements of unrest operating in the coal, cotton and engineering trades. These appear to have restrained buyers and sellers, who are alike afraid to launch out, owing to the uncertainty, as to cost of production and products a few months ahead. In the export branch of trade, business, on the whole, has been fair and still is so.

Petroleum.

The demand for petroleum has been fairly active. The price for domestic uses is 11d. to 1s. per gallon. Oil in bulk, for steam-raising, is £3 10s. per ton; oil for vaporising in Diesel engines, £4 5s. per ton; and for use in semi-Diesel, 4½d. per gallon. American pale cylinder oils are £11 5s. to £27 10s. per ton. Scotch oils are £10 5s. to £11 15s. Machine and engine oils are 2s. to 2s. 8d. per gallon.

Motor Spirit.—1s. 7d. to 2s. 1d. per gallon.

Methylated Spirit.—2s. 1d. to 2s. 5d. per gallon.

Turpentine.—86s. per cwt. for spot, and 71s. 9d. for July-December deliveries.

Linseed Oil.—45s.

Castor Oil.—58s.

The National Physical Laboratory.

According to the *Ironmonger*, a number of distinguished representatives of societies for scientific research have recently visited the National Physical Laboratory, and were shown the work actually in progress in the various departments. The importance in modern engineering research, of questions such as the fatigue of metals and their resistance to strain was emphasised by experiments shown to test the efficiency of gear-boxes, to determine the safe load which can be applied to metals under repeated loadings, when the metals are at high temperatures, and to investigate boundary lubrication. The electrotechnics section proves how it has succeeded in measuring electric currents. Though electric currents have been in use for more than fifty years, and forty million pounds' worth are employed in Britain for power transmission, little or nothing has been known until recently of the current they could safely carry. As a result of its work in this department, it is estimated that an immediate saving to industry of £1,000,000 would result.

Timber and Building Materials.

The timber business has been quite fair this week, and the shortages in scantlings, which have been in evidence during the past few months are now being made good by arrivals. The building trade is steady, operations during the past week or ten days showing an upward movement.

Timber Prices.—3 x 9 deals, 1s. 1d. to 1s. 2d.; scantlings, 10½d.; beaver boards, 3⅝d.; floorings, 6d.; ceilings, 4d. to 4¼d.; Oregon, 5s. 3d. a cube; pitch pine, 6s. 6d. to 7s. 6d.; corrugated iron, 8¼d. to 8¾d. Furniture timber: Burmah teak, 16s. to 17s. 6d. per cube, Johannesburg; American oak, 1 in., 10½d.; 1½ in., 11d.; 2 in., 1s., at coast; Japanese oak, 11½d at coast; West African mahogany, 1 in. to 4 in thick, 27s. to 28s. per cube, at coast; Rhodesian mahogany, 9s. per cubic foot, at mills; Honduras mahogany, 30s. per cubic foot; American yellow pine, 1s. 3d. to 1s. 4d per foot of 1 x 12, here; American pine shelving, 9d per foot, 3-ply wood, 3m.m. up to 5 m.m., alder and birch, 4d to 6½d. per sq. foot; oak and teak, 3-ply, 10d. per sq. foot. Brick Prices, etc.: Klompje bricks, 25s. per 100 at works; fire-bricks, £10 per 1,000 at works; stock bricks, 65s. to 70s.; wire cuts, £4 10s to £5; and £5 for pressed per 1,000 at kilns; columns from 20s. to 30s., according to size; roofing tiles, Marseilles, £25 per 1,000 at the works; chimney pots, 12 in., 6s.; 15 in., 7s. 6d.; 18 in., 9s.; dry red oxide, 14s. per 100 lb.; white lime, 7s.; blue plaster lime, 5s. to 5s. 3d.; blue lime, 4s. to 4s. 3d.; cement, 9s. 9d. a bag; damp course and roofing, 36s. to 54s. for 1 to 3-ply.

The Unemployment Barometer in Britain.

On June 18 the number of persons on the live registers of the employment exchanges in Great Britain, who were wholly unemployed, was 1,200,600. This was 3,248 more than in the preceding week, but 285,278 fewer than on January 1, 1923.

U.S.A. Trade Conditions.

According to a cablegram from the United States Department of Commerce to the Acting American Trade Commissioner (Mr. William E. Vaughan, jun.), exports from the United States to British South Africa during the month of June totalled 3.000.000 dollars, approximately £638,000; while the imports into the United States from South Africa for the same period amounted to 1,000,000 dollars, or approximately £212,650. These figures represent a considerable increase over the same month in 1922, during which period the exports were 1,600,000 dollars, and the imports 131,000 dollars. There is the usual seasonal slackening in production and trade generally in the United States, although conditions are much better than the same period of last year. Money rates are high, but at the present time there is no urgent demand. Prices, especially cotton and steel, are declining slightly. While, lately, commercial activities have slightly abated, both production and consumption of goods continue of very large volume. The policy now prevailing, as it has been for some time past, is one of conservatism.

Capetown Water Supply.

The Board of Engineers appointed by the Capetown City Council to consider the best means of augmenting the water supply of Capetown has presented its report, which recommends:—The extension of the existing dam at Steenbras by widening and raising it by 40 feet so as to impound 6,000 million gallons. The maximum depth of the water will then be 90 feet, and when the reservoir is full the surface area will be about 827 acres. The construction of a new outlet tower. The clearing of the reservoir area of all vegetation. The construction of a settling and screening chamber near the outlet end of the tunnel. The provision of a 33-inch lined steel wrapped pipe from the new outlet tower to Newlands reservoir, together with all accessories. The estimated cost of the work (based upon current prices, is £1,090,000, made up as follows: Raising dam, spillway, new outlet works, clearing reservoir site, engineering and contingencies, £260,000; Pipe line from outlet tower to Newlands, and all accessory works, engineering and contingencies, £750,000; Interest charges during period of construction (three years), £80,000; total, £1,090,000.

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City of Pretoria 5 % Inscribed Stock, 1953.

ISSUE OF £400,000 OF AUTHORISED LOAN OF £750,000.

The Municipal Council of Pretoria will receive applications up to the 31st day of August, 1923, for the above 5 per cent. Inscribed Stock, addressed to the Town Treasurer, Pretoria, in terms of the Prospectus. The Loan will rank pari passu with previous Loans, and is secured on the Rates, Rents, Revenues and Assets of the Council.

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(1) The Loan offers a safe and gilt-edged investment for **30 years.**
(2) The price of issue is **99.**
(3) The Interest is **5** per cent. per annum.
(4) Applications will be received for **£5 of Stock** and upwards.
(5) **Five per cent.** of the amount applied for is payable by 31st August, 1923, and the balance in instalments to suit applicants (or in full) at any time **within twelve months thereafter.**
(6) Interest will be paid on the deposit and instalments **from the date of receipt thereof;** first payment on 1st January, 1924.
(7) Cheques for Interest will be payable half yearly throughout South Africa **Free of Exchange.**
(8) Consult your Brokers or Bankers.
(9) Prospectuses and Forms of Application may be obtained from all branches of the National Bank of South Africa, Ltd., from the leading Brokers, or from the undersigned.

M. G. NICOLSON,
Town Clerk

Municipal Offices,
P.O. Box 440, Pretoria
15th July, 1923.

SHIPS AND SHIPPING.

COMMONWEALTH LINE LOSSES—ANOTHER DISASTROUS EXPERIMENT IN STATE OWNERSHIP.

(From Our Special Correspondent.)

London, July 13.

Probably the most significant shipping news item of the week is the announcement of the losses incurred by the Commonwealth Line of Australia. Rumours regarding the actual state of affairs have been in circulation for some time past, but now the question has been placed beyond the bounds of conjecture. According to a cable from Melbourne, received in London a day or so ago, the Prime Minister, in moving the second reading of the Shipping Bill, produced the balance sheet of the Commonwealth Government Line. The loss for 1921-22 amounted to £1,170,000, and the estimated loss for 1922-23 is £1,600,000. The losses are due to the post-war shipping slump, the unsuitability of the ships for Australian trade, and the heavy interest and depreciation due to capital cost. The net loss on the entire fleet of vessels up to June 30th is stated to be £2,600,000.

This is grim news for the advocates of State ownership, and it is not surprising to learn that the Commonwealth authorities intend revising the whole system of administration. A board of control will be appointed and the ships handed over to it. Unsuitable vessels are to be sold, and the value of the fleet written down from £12,000,000 to £4,000,000. The proposed board is to include a shipping expert, an expert on dockyard work, and a financial expert, who will supervise the line as a whole. Ships belonging to the "D" and "E" class will be disposed of, and the "Bay" vessels will be retained. These are well-known in South African waters. Further, in exchange for the assets handed to the board, the board will issue debentures to the total value of the ships, carrying fixed interest at 5 per cent., the board to retain the whole profits until a reserve of 25 per cent. of the total capital is outstanding at the time it is built up, thereafter to retain 50 per cent. profits. The balance will go to the Treasury, to be placed in a trust fund.

Comment here upon the disastrous experience of the Commonwealth Line has been restrained. Private shipowners at the moment are too full of their own difficulties to commiserate or to criticise. But the general opinion of shipping men appears to be that it was futile to hope the results of the working of this State-owned fleet would prove less costly than other undertakings of the kind. Nor are they particularly optimistic of future operations under the administration of Mr. Bruce's new board.

Building Without Profit.

A significant commentary upon the condition of the tonnage market is contained in an announcement emanating from the Wallsend-on-Tyne yard of Messrs. Swan Hunter & Wigham-Richardson. This well-known firm has just accepted orders to build two 8,400-ton vessels "at a price which permits of no prospect of profit." The only reason for undertaking work upon such conditions can be to do something towards alleviating the unemployed problem, which is as acute and menacing in the shipbuilding yards as it is in practically every other department of industry. Even in Germany, where there has been a considerable building boom, to the amazement of the outside world with little or no knowledge of the peculiar condition of Continental economics, there are now signs that the boom is at an end. Germanic yards received a considerable impetus under the "Law of Indemnity" construction scheme, but this now draws to a conclusion of its operations, so that the yards faced, as they will be, with only the resources of owners requiring new tonnage to look to for payment have now but the shadowiest prospect of remunerative occupation. From the rest of Europe they are not likely to receive many orders, for they can only tender under a decided disadvantage. Owing to the downward rush of the mark, Germany is finding it increasingly difficult to obtain the much-needed coal and iron upon which she is today so dependent. Furthermore, the wages question, consequent upon almost daily mark depreciation, is in itself a considerable obstacle in the path of trade activity.

Yards For Sale.

If further evidence were required as to the stagnant condition of the building market it is provided in the announcement that several well-known shipyard properties are up for sale, according to a well-informed correspondent of the "Daily Telegraph." Thus, the business of a leading Irish dockyard company, now in voluntary liquidation, is offered for sale by tender as a going concern, while a Dundee shipyard is for sale by private treaty, and "reasonable offers will be considered." Then, closely allied to shipbuilding and repairing interests, is the offer for sale by public tender by order of the receiver, of a freehold engineering works at Lowestoft, and, in yet another instance, offers are invited for the purchase of a boiler and tank works at Cardiff as a going concern. This by no means exhausts the list, but it will suffice as an indication of the times through which the shipbuilding and engineering industries are passing. Optimism would seem still to prevail in one quarter, however, for, despite the fact that yards already in existence are hard put to it to find sufficient employment, a plot of land, comprising 80,000 square metres, in the Antwerp neighbourhood, is for sale, and "affords a very excellent site for the erection of buildings for commercial or naval shipyards."

Steam Replaced by Motors.

There seems to be no doubt that the motor ship will in the not too distant future replace the steamship as the latter did the windjammer. Sir John Cadman, speaking at the International Navigation Conference, a few days ago, said that although the first cost of a motorship is from 10 to 15 per cent. higher than a steamship, and it has a shorter life, these factors are more than offset by the saving in operating expenses, which amount to from 30 to 40 per cent. Diesel engine oil is higher in price than ordinary fuel oil, but this situation may be remedied by the use of internal combustion engines designed to use a lower-grade and cheaper oil. For some time to come, however, the high-speed passenger ship of large tonnage will remain a steamer, for there are special difficulties associated with the utilisation of internal combustion engines for the propulsion of high-speed ships.

Nevertheless, on all hands there are indications of the dawn of the motor age. The Netherlands Steamship Company, for instance, has decided to convert a 10,000-ton steamer to a motor-vessel. This ship was only built in 1916, and the owners have apparently decided that owing to the remarkable economy of the oil-engined vessel, it is desirable to incur the heavy expense of conversion.

In America, eight large steamers, originally owned by the Shipping Board, varying in tonnage from 5,000 to 12,000, are also being converted by the installation of oil engines. It is estimated, says the "Motor Ship," that at present-day prices of oil and coal, a saving of between £8,000 and £10,000 per annum can be effected in the fuel bill, by converting a 10,000-ton 11½-knot steamer to a motor ship. This conversion from steam to motor is quite in accord with the expressed views of Mr. Lasker. He believes that by means of scrapping unsuitable vessels and converting others without loss of time, "supremacy in the economic operation of ocean freight carriers might pass from foreign fleets to the American merchant vessel, for the simple reason that America would then possess more economical motor tonnage than other countries, and its own carrying trade would become firmly established before foreign shipowners could follow America's example." To a degree Mr. Lasker is correct, but he sadly underestimates the prescience of British shipowners if he reckons that "supremacy" is thus easily to be acquired.

A Free Market for Gold in London.—Congo Mining Progress.—Vereeniging Estates Activity.—Board of Trade and Industries.—New Coal Grading Regulations.

Industries The South African Commerce
Mining & Engineering Journal
THE ONLY MINING AND ENGINEERING WEEKLY PUBLISHED IN AFRICA.
Finance Established 1891. Transport

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, AUGUST 11, 1923 No. 1663.

At Wankie: The Largest Coke Oven Installation in Africa.

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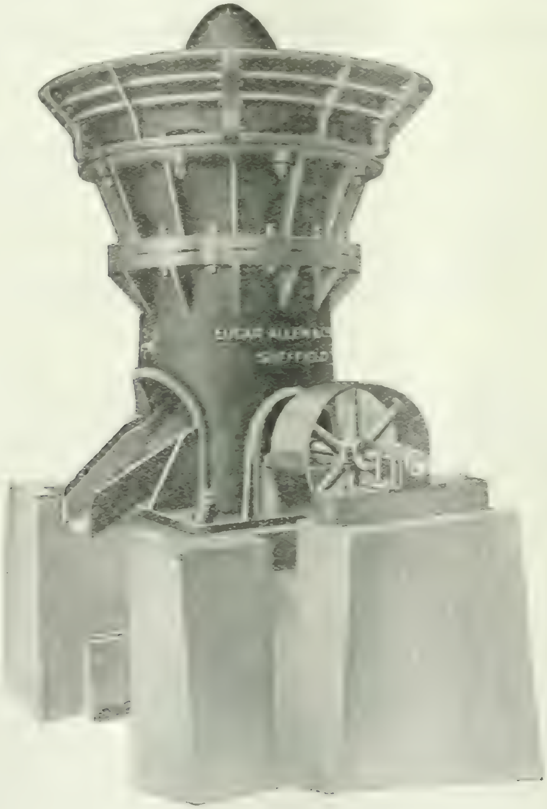

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Congo Mineral Development.

AMAZING RICHNESS—A NEW TREATMENT PROCESS—TRANSPORT AND EXCHANGE QUESTIONS.

(By our Special Commissioner).

I have just returned from a brief investigation of the Congo copper-fields and am greatly impressed with the progress made since my last visit a year ago, particularly as regards the development of Ruashi, which is the Union Minière's newest mine.

Each year the Union Minière is controlling in Katanga the most extensive cupriferous deposits yet found in the world and registers a further step forward towards a consummation of the ambitious plans which ultimately will result in the company occupying a dominating position in the market with this metal. This year the company will achieve a further record production with an output of approximately 55,000 tons of copper of a value of over three and a half million sterling, and the July output which is a record, with a monthly declaration of about 5,500 tons, which in value easily outstrips the revenue of the Crown Mines as the biggest Rand producer.

A View of Likasi Copper Mine.

The most remarkable new development is the exploitation of Ruashi Mine, which is ten miles from Elisabethville and adjacent to the Star Mine. A year ago only drills were observable at Ruashi, but now there are immense open workings similar to a diamond mine observable. The over-burden is being stripped and already the existence of copper ore of an approximate value of twenty-five million sterling has been determined. The company is now commencing to despatch rich ore averaging 20 per cent. at least from Ruashi to the smelters, and plans are now maturing for the equipment for this wonderful mine containing ore body dimensions of 600 by 200 by 40 metres thick lying at a depth of 12 metres. The other mines producing are the Star, Kambove, Luisha and Likasi, and numerous other propositions ready to produce at short notice.

Amazing Richness.

As instancing the amazing richness of the fields I may remark that one mine only, namely, the Star, has yielded to date approximately 100,000 tons of copper, of a value of, say, six millions sterling from 700,000 tons of ore and is still a big producer. An immense amount of prospecting and initial development is continuously in progress by drilling, and amongst the new encouraging prospects I may make reference to a new mine situated 25 kilometres north of the smelters at Lubumbashi. Regarding Lubumbashi, the furnace efficiency is greatly improved the last year or two and the company is now completing the installation of a new large reverberatory furnace which will come in commission in a few weeks' time and is anticipated to substantially augment the production. The utilisation of a reverberatory furnace for oxidised ores is a metallurgical innovation and there has been criticism from some technical quarters, but the company is confident of success after exhaustive tests, and provided the results fulfil expectations, the company will probably build a new plant embracing four to five reverberatories at Lubumbashi. The bricks for this furnace come from Vereeniging.

Meanwhile earnest consideration continues to be given to future metallurgical policy as regards the comparatively low grade ores, and the eventual solution of this will likely be an electrolytic leaching process at Panda. The scheme will include the ultilisation of water power from neighbouring rivers for the generating of electricity. I understand the adoptoin of this scheme in its entirety is postponed mainly on account of financial considerations, but a partial operation of this project will likely be undertaken in the near future and an augmentation of the company's production to 100,000 tons of copper per annum during the next year or two is probable. The Panda crushing and concentrating plant, which has a capacity of 1,000 tons per diem and is the largest installation of this type in Africa, is now operating at about half its capacity and the surplus power is available for carrying into effect the first portion of the leaching scheme, the efficacy of which is demonstrated by a pilot leaching plant.

A New Treatment Process.

In connection with the future metallurgical policy much interest is attached to a new treatment process about to be tested on a substantial scale by a metals production company at the Bwana M'Kubwa Copper Mine in Northern Rhodesia, the results of which may assist in determining the future metallurgical policy of various African copper mines. At Panda two electric furnaces are being installed for treatment of cobalt which is contained in substantial quantities in certain Katanga ores. Other installations being, or about to be erected, include a coal pulverisation plant at a cost of five million francs; also a new power plant 2,500 kw. at Lubumbashi, also a new sintering plant, also a ten unit preliminary washing plant at Ruashi Mine and a power plant with the first high tension transmission line for Ruashi. Furthermore it is proposed to equip the Sankishia Colliery in the near future.

As regards tin, Lusangia is producing 70 tons concentrates or 50 tons metal monthly, and next year the intention is to exploit three other areas of alluvial cassiterite east of Sankishia. Katanga is also the greatest supplier of radium in the world but the present problem of this is rather one of selling than of production. As regards gold, the Ruwe field is at present inactive. It is probable that further attention will be directed to prospecting diamondiferous pipes already found at Kundelungu. There are potentialities of both gold and diamonds in Katanga, and, added to this gamut of mineral wealth, is the fact that Katanga also contains immense iron deposits, and if satisfactory coal deposits are exploited the country may become a great steel producer, but everything at present is over-shadowed by the immensity and richness of its copper.

The Problem of Transport.

The transport position is both difficult and complicated [illegible]. The Union Mission [illegible] [illegible] [illegible] which is a [illegible] [illegible] [illegible] [illegible] to take Wankie coke and ship copper over the Rhodesian Railways through Beira up to a certain amount until 1930, but the company for the past few months have been experimenting in sending a portion of surplus tonnage to Dar-es-Salaam and 200 tons of copper have gone to that port now. This is probably cheaper than exporting through Beira with the [illegible]. Two other routes via the Atlantic which offer an eventual solution to the Katanga transport problem are now being constructed, namely, the Lobito and the Lower Congo railways. As to the former, I ascertained that arrangements are being completed by Mr. Robert Williams for financing the completion of the line which is to go through to Katanga in [illegible] of four years. In connection with the Lobito project, Captain Thompson, of Robert Williams and Co., recently motored to Lobito from Elisabethville and back and reports on the road as being very [illegible]. Meanwhile, [illegible] are being constructed [illegible] of all the Belgian Lower Congo stations, namely, at Boma and Matadi.

A View of the Kambove Copper Mine: Huge Terraces of Ore.

Exchange Difficulties.

The present position at Katanga is unsatisfactory in so far as British trade relationships are concerned on account of the recent heavy fall in the franc. In the last few days exchange at Elisabethville has fluctuated between 96 and 101 francs to the pound sterling, and the maximum touched last year was [illegible]. In the past few days the South African banks have advised a decision to discontinue facilities for trading with the Congo, except on a strictly cash, non-discount basis. The break in the exchange is paralysing private trade. The Union Mission is likely to report support via the Congo River in order to meet dealings in [illegible] which is against them and trade between the Union, Rhodesia and Katanga must correspondingly suffer. The exchange problem is serious and thus lies a shadow of the [illegible] Central Africa which is now blossoming forth into industry.

As I stated last year on my former visit, the Belgians desire to work out their own political economic destinies without reference to the Union. They would like to trade with us on a business-without-politics basis, but they can hardly be expected to be keen on the cultivation of commercial relationships which are unprofitable by the exchange break. The Belgians have few, no delusions as to the Congo being a "white man's country" and are alive to the fullest utilisation of black labour, whom they are training in technical schools to astounding degrees of efficiency. Locomotives are operated on the Congo railways by natives, who also undertake certain kinds of other skilled work. During the recent visit of Mr. Robert Williams the natives trained in railway schools explained to him thoroughly the construction and operation of a locomotive. Whilst some may deplore this increasing tendency to exploit these areas along lines opposed to the Rhodesian doctrine to make Africa a white man's country, the Belgians are deserving of all praise for the magnificent work which they have achieved in the Congo, and particularly Katanga, where the natural resources are not sacrificed to chimerical political fetishes.

Of Great Significance.

All these matters are of the greatest political and commercial significance to South Africa and the Continent as a whole. They foreshadow a not far distant future when the Rand in its declining years will see a shifting of industrial predominance from South to Central Africa, where some of the richest and most extensive base metal deposits of the world are situated with reservoirs of cheap power and cheap coloured labour. In other words, in a dozen or fifteen years' time the industrial hub of Southern Africa will be centred in the region between the headwaters of the Congo and Zambesi, and these vast copper, zinc, lead and other deposits of Katanga and Northern Rhodesia will be operated by "white coal" or water power and black labour, with railways radiating north, south, east and west. These will be the driving power of industrial production of the sub-Continent and the ramifications will affect and perhaps control world prices of some of these metals.

But in this magnificent conception the European does not bulk large. At the present time there is little opportunity offering for white mechanics or miners in the Katanga, and I would reiterate my warning against Europeans proceeding in search of employment to that country and Northern Rhodesia, where immigration restrictions are severe. Looking into the future one can foresee two civilisations struggling for supremacy in the sub-Continent—that is, the vigorous black civilisation, officered by a handful of Europeans, in the North, and a mixed white and black civilisation in the South.

Questions.

Will the Zambesi constitute an effective permanent frontier to these two? Will this line approximate the demarcation geographically and climatically and suffice politically to separate these two civilisations, each fostered by mineral industry, or will they clash? Will Southern Rhodesia constitute a buffer State between the two? No man can now foretell, but this indisputably biggest problem of Southern Africa and the realisation of its supreme importance is being hastened by the development of the mineral resources in South Central Africa and the influence on its natives.

Coal Grading.

TRANSVAAL AND NATAL REGULATIONS.

The last issue of the Government Gazette contained the regulations framed by the coal grading committees of the Transvaal and Natal. In so far as Natal is concerned the principal points in the regulations are as follows:—

A grading certificate, as provided for in section one of the Act, may be applied for by a colliery at any time up to within twenty-eight days of proposed date of shipment of the coal to be graded, and the application shall be deposited at the office of the grading committee of the Province, together with the fee prescribed.

The fee to be called for for grading, or for subsequent re-grading at request of collieries, shall be as follows:—£15 on an average output up to 2,500 tons; £25 on an average output up to 5,000 tons; £35 on an average output up to 10,000 tons; £50 on an average output up to 20,000 tons; £65 on an average output over 20,000 tons. The following information shall be given by any colliery when applying for a grading certificate: Name of colliery; State if coal from that colliery has been exported before; Average output. The grading of the coal or coals of any colliery shall be determined by the committee on the basis of an examination of the analyses and tests of samples of coal which have been collected by the official or officials appointed by the committee for that purpose, in the uniform manner prescribed by the committee, at the mine, in transit, in store, or elsewhere, subject also to such other tests as may be considered necessary from time to time.

The method of sampling shall be determined from time to time by the grading committee. The committee will notify the colliery concerned as to the method of sampling, and the results obtained from the samples so taken.

A grading certificate, as provided for in section one of the Act, shall be in the form prescribed in Annexure 1 hereof, and may contain such other particulars as the grading committee may consider desirable to insert.

A grading certificate may be qualified, suspended, withdrawn, or refused at any time by the grading committee; whenever a grading certificate has been withdrawn, it shall immediately be returned to the grading committee.

The sampling and testing of coal from the various collieries shall be repeated as frequently as may by the committee be considered necessary, and the certificate shall be subject to such variation as the results of the tests made from time to time may render necessary. In the event of the committee having to issue a new certificate in terms of this clause the old certificate must be returned to the secretary of the grading committee for cancellation.

Three members of the grading committee present in person, or by their duly appointed alternates, shall constitute a quorum at all meetings of the committee and no business shall be transacted at any meeting of the committee unless the requisite quorum be present at the commencement of such meeting.

In the absence of the official chairman, or his alternate, from any meeting of the committee, the chairman shall be elected from amongst the members present at such meeting.

Transvaal Regulations.

The Transvaal regulations have the following *inter alia*.

A grading certificate, as provided for in section one of the Act, may be applied for at any time, and the application shall be deposited at the office of the grading committee for the Province, together with the fee prescribed.

The fee to be called for shall be as follows: £50 on an average output up to 10,000 tons; £75 on an average output up to 20,000 tons; £100 on an average output up to 40,000 tons; £125 on an average output up to 60,000 tons; £150 on an average output up to 80,000 tons or over.

The following information shall be given by any colliery when applying for a grading certificate: Name of colliery; District in which situated; Copy of proximate analysis of coal; Calorific value in B.T.U.; Percentage of sulphur; State if coal from that colliery has been exported before; Average output. The grading of the coal or coals of any colliery shall be decided upon by the grading committee on the basis of and after examination and test of samples that have been collected by the official graders, inspectors, and or samplers in a uniform manner prescribed by the committee, in the mine, in transit, in store, or in any other position.

The Sheba.

FAVOURABLE DEVELOPMENTS.

The first ordinary general meeting of the shareholders of the Sheba Gold Mining Company, Ltd., was held recently in London, Mr. C. F. Rowsell (the chairman) presiding. The chairman in the course of his speech, said: Gentlemen,—At the date of your balance sheet the issued capital was 878,886 shares, but since that date the balance of the issuable capital has been successfully placed, and it now amounts to 1,188,510 shares of 5s. each. We have now arrived at the position where we may look forward with every hope to the future. Already the results show a considerable improvement, and I have no doubt that each month will bring us nearer to the success which we all look for. The recent developments referred to in the report are of an even more satisfactory character than I had any reason to anticipate when I addressed you in February, 1922.

Zwartzkopje.

The two points at which very excellent results have been secured—results which undoubtedly very largely alter the whole position of the mine—are, first, in the No. 5 level Zwartzkopje schist stope. We received in one of our weekly reports advice showing that considerable values had been found in the footwall, the first sampling giving an average of 36 dwts. over 36 ins. Two machines were then started driving east, and the face revealed values of 5½ ozs. per ton over 66 ins.; at 12 ft. in, the values were 34 dwts. over 84 ins., and at 18 ft. 64 dwts. over 96 ins.; while you have seen from the report that the average value of the last 26 ft. was 2 ozs. 4 dwts. over 75 ins., the last sample being 3 ozs. 16 dwts. over 48 ins.

This strike is one which, of course, will remind those who have been connected with the Sheba for some years of the results secured in the Zwartzkopje in the upper levels, and it will not require a very large amount of ore of this character to raise the average value of the developed ore of the mine by a considerable amount.

Secondly, the developments on the No. 10 level east drive are also of a very satisfactory character, the average value, as pointed out, for the last 14 ft. being 18½ dwts. over 40 ins., both a good value and a good width, the last sample 16½ dwts. over 48 ins.

The values of the 9th level rise average to 38 ft. up 19 dwts. over 32 ins., the last sample being 5¼ dwts. over 24 ins., and are also decidedly encouraging.

The further developments on the Zwartzkopje No. 2a borehole winze, which at 60 ft. averages 1 oz. 3 dwts. over 36 ins., have resulted from development which was undertaken owing to indications secured in the borehole, and, it is hoped, will lead to still further good developments.

Intombi.

The developments in the Intombi No. 10 level west drive, which are also referred to in the cable of the 30th June, show an average value over the last 35 ft. of 8 dwts. over 30 ins., the last sample being 11 dwts. over 30 ins., which is quite encouraging. Previous to the receipt of the cable the information we had as to the level was that in the east face values had been disclosed over a length of 76 ft., which varied from 6 dwts. over 18 ins. to 32 dwts. over 30 ins., and that in the west face the assays for the first 99 ft. had varied from 19 dwts. over 27 ins. to 46 dwts. over 30 ins., from 115 ft. to 155 ft. 9 dwts. over 30 ins., and from 216 ft. to 225 ft. 9 dwts. over 30 ins. Under the circumstances I am more than pleased at the very excellent results which are now being secured, and I sincerely hope that you will reap the full reward of the confidence which you have placed in the property in joining in the reconstruction scheme.

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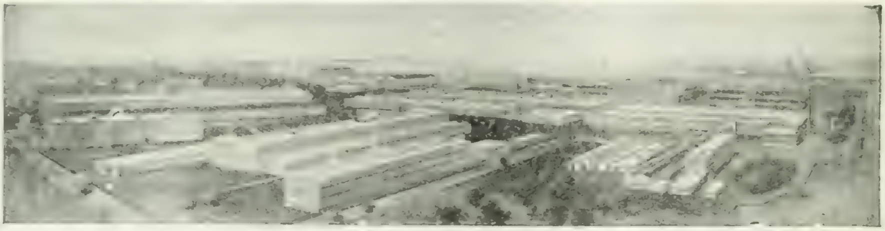

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Free Market for Gold in London.

HOW UNRESTRICTED GOLD EXPORTS WOULD STIMULATE EMPIRE TRADE.

In a special cable to "The Star" of August 6, Mr. F. W. Hirst, the well-known economist, says that experts are advocating the re-establishment of a free market for gold in London. We are glad, therefore, to be able to print the following article in which Sir James Wilson, K.C.S.I., an acknowledged authority, gives a succinct statement on the effect of the re-establishment of an unrestricted market for gold in London.

On February 9, 1922, the late Chancellor of the Exchequer declared that it was the intention of the Government to permit the re-establishment of an unrestricted market for gold in London at the earliest date at which the state of the exchanges renders this course possible and desirable. Satisfactory progress in this direction has recently been made, and we seem now to be within measurable distance of the restoration of the British paper pound sterling to the full value of the gold in a sovereign. On December 12 the gold bullion, the free export of which is at present permitted, was quoted in London at 89s. 7d. (that is 4·18 paper pounds) per fine ounce of 480 grains. This makes the value of the paper pound in London on that day 107 grains of fine gold, which is equivalent to 95 per cent. of the 113 grains of fine gold contained in the sovereign. On the same day in New York the rate of exchange was quoted at 4·63 dollars to the pound sterling, which again is 95 per cent. of the par rate of exchange, 4·87 dollars to the sovereign. Thus on that date both in London and in New York the British paper pound was equivalent in value to 107 grains of fine gold, or to 95 per cent. of the sovereign—in other words, measured in gold it was worth 19s. A year ago the price of gold in London and the date of exchange in New York both made the value of the British paper pound 97 grains of fine gold—that is, 86 per cent. of the gold in a sovereign, or 17s. 2d. measured in gold. The improvement which has taken place in the value of the British paper pound measured in gold during the last twelve months is a little over 10 per cent., and it is now worth both in London and New York, and therefore all the world over, only about 5 per cent. less than the gold in a sovereign.

The causes of this improvement are mainly: (1) the diminution in the quantity of currency notes outstanding from 311 million pounds a year ago to 289 million pounds on December 6—a reduction of 8 per cent.; (2) the increase in the ratio of the gold and bank notes in the Currency Note Reserve to the total issue from 15·27 per cent. a year ago to 16·66 per cent. now; and (3) most of all, the growing confidence of the world's financiers (including bankers, merchants and investors) in the determination and ability of the British Government to make the British pound sterling again equivalent in value everywhere to the golden sovereign, as it was for nearly a century before the outbreak of war. The improvement is not directly caused by a balance of trade more favourable to this country, although that no doubt is one of the grounds for the growth of confidence. It is true that the rate of exchange between two countries does vary to a small extent from day to day according to the relation between the demand for immediate credit and the available supply of such credit; but, so long as movements of gold between the two countries are unrestricted, the variations in the rates of exchange due to fluctuations in that relation are limited by the cost of transporting gold from one country to the other, and as a matter of fact the lowest point in the rate of exchange between London and New York ever known for many years up to July, 1915, was 4·77 dollars to the pound, as compared with the par rate of 4·87—a difference of a little over 2 per cent. Nor is the rate of exchange directly affected by the amount of the country's floating debt. Whatever be the amount of that debt, and whatever be the balance of trade, the rate of exchange between any two countries whose notes are freely convertible into gold at their face value, and which impose no restrictions on the import or export of gold bullion or coin, cannot depart from par by more than an insignificant fraction in excess of the cost of transporting gold.

At present any holder of a currency note is legally entitled to demand a sovereign for it at the Bank of England, but, as he is forbidden by law to export or melt the sovereign, except by special permission of the Government, the sovereign would be no more use to him than the currency note. If, however, the present restriction on the export of gold were abolished, he would be able to send his sovereign abroad, say to the United States or Canada, where he would get 4·87 dollars for it, whereas at present he can only get 4·63 dollars for his paper pound. If Parliament were suddenly to cancel the Act passed some two years ago, which empowered the Government to impose restrictions on the export of gold, there would be a rush of speculators demanding gold from the Bank of England in exchange for currency notes, with the object of profiting by the better rate of exchange for sovereigns than for notes. It would, therefore, be advisable for the Government to gives some notice of the proposed removal of the restriction on export of gold, and to prepare for a possible demand for gold by holders of currency notes. If the Government were to announce their intention to remove the restriction, say on the 1st of June next, and to prepare for such a possible demand, the rate of exchange with New York would gradually rise until it approached par. If at the same time the Government took steps to make a gradual reduction in the quantity of currency notes outstanding, and to increase the amount of gold held in the Currency Note Reserve, the rise in the rate of exchange would be accelerated, and the difficulty of meeting any possible demand for gold on the 1st of June would be diminished. Now that so many people in this country have become accustomed to the use of £1 notes, it is probable that they will be content to use them to a large extent in preference to sovereigns, as was the case in Scotland before the war, if they feel certain that at any time they can obtain a sovereign for their currency note and export it if they wish. It seems probable, therefore, that, after things have settled down, the country will not require much more gold for currency purposes than it did before the war. According to the Cunliffe Committee the total amount of gold held or used in the United Kingdom for currency purposes on June 30, 1914, was 161·5 million pounds' worth, and at present there is about the same quantity of gold so held in this country, including 125 million in the Bank of England and 27 million in the Currency Note Reserve. But it is possible that there might be a run upon the Bank of England for the conversion into sovereigns of a considerable proportion of the currency notes outstanding on June 1, and, to prepare for such a possible contingency, the Government might obtain by bargaining an option for the purchase or loan of 100 million pounds' worth of gold from abroad. The Federal Reserve Banks of the United States at present hold gold to the value of 600 million pounds. They could easily spare 100 million of this immense reserve, and would no doubt be willing to do so for a consideration. The Indian Government holds in its Currency Reserve gold to the value of 28 million pounds, which is at present useless to us. It would quite likely be a consideration, a large proportion of the gold reserve, and possibly some gold would be attracted at a favourable rate from other countries. It would probably not be necessary to actually ship any large proportion of this gold, so long as people knew that it was readily available, and when confidence had been fully established, the present currency system of the United Kingdom would be quite in working order with an amount of gold permanently held in the country not much larger than was so held before the war.

The effect of the re-establishment of a free market for gold in London would be to restore the pound sterling everywhere to the full value of a sovereign, to improve the credit of the United Kingdom all over the world, and to put an end to the uncertainty regarding the value of the British pound in the foreign exchanges which has so greatly hampered the course of trade with all foreign countries, as well as with British possessions abroad. The rate of exchange between the United Kingdom and such countries as the United States, Canada, Switzerland, Holland, Sweden and Japan, which have maintained or restored the value of their paper currencies nearly to the value of the gold coin which each unit represents, would be stabilised, subject only to the small fluctuations which took place before the war. It is true that there would still be fluctuations in the rates of exchange with other countries whose currencies are seriously depreciated, but these fluctuations would be considerably reduced in extent, as they would depend only upon the varying value of the currency of the foreign country, and not, as at present, upon variations in the value both of the foreign country's currency and of the British pound. Moreover, the stabilisation of the British currency all over the world would greatly encourage the efforts of other countries with depreciated currencies to stabilise their currencies also, and make the operation simpler.

One effect of removing the restrictions on the export of gold from Great Britain would be that there would be a tendency for the prices in sterling of all commodities imported from abroad and of all commodities produced in this country with which they compete, to fall in proportion to the improvement in the value in exchange of the British pound. But as now the value of the pound is within 5 per cent. of the gold in a sovereign, the consequent fall of prices due to this cause could not be more than 5 per cent., and would hardly be noticed among the fluctuations in the prices of commodities which are due to other causes. The stabilisation of exchange would be a great encouragement to trade with Great Britain and with all foreign countries, and therefore to the development of industries and to an increase of employment, both in this country and abroad. It seems time, therefore, for the Government to resolve on re-establishing the free market for gold in London within the next few months, and to make an early announcement of its intention to do so, and of the steps to be taken towards carrying it out.

Letters to the Editor.

THE CINDERELLA: A LABOUR VIEW.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—The scheme for financing the above property is receiving wide publicity, yet the profitable recovery of the gold "ex situ" if it exists has had no mention. Hence this letter to you. The writer is satisfied that if "ore" exists anywhere in the earth's crust, capital will be found to exploit it. By the term "ore" is meant, in this instance, gold-bearing rock or reef that can be worked at a profit. Yet the nature and occurrence of the ore-body count. When the Cinderella shut down in June, 1913, the grade was seven weights—to be exact 6¾ weights at the time the value of the gold produced was 26s. (twenty-six shillings) per ton, and working costs were 27s. (twenty-seven shillings) per ton with standard gold 900 fine at £4 (four pounds) the oz. At the present price, i.e., 4s. 6d. (four shillings, six pence) a dwt., the Cinderella could produce at a profit. At that time the Knights Deep was working profitably on 3 dwt., i.e., 12s. (twelve shillings), working costs 11s. (eleven shillings) per ton. So a shilling per ton either way is all the difference. The one is payable proposition, the other unpayable. Accordingly, what constitutes ore [illegible] is a variable constant. For the purposes of mine valuation, ore is divided into (a) possible ore, (b) probable ore, and (c) positive ore. These terms explain themselves in their relation to payability. The last named division, positive ore, may need some enlargement or description. Ore is positive when opened up by drives on reef and then connections, the values there produced on being samples over a stoping width showing ore above the pay limit. Now the Cinderella belongs to the latter category. I say this cheerfully. The present day methods of mining are ahead of those prevailing when the mine closed down. The working costs to-day in the deepest mines do not approach 26s. (twenty-six shillings) a ton of the Cinderella. It is difficult to discuss the question technically. Political economy deals with the wealth of a nation, it's resources and the distribution of those assets, so the writer is here forced to suggest State mining for the Cinderella in it's present case or position, and for the following reasons: 1. On Mr. Greig's suggestion the State is to put £500,000. This sum should, on current business etiquette, make the State the predominant partner, hence the State should control the policy and the working of the mine, and the writer's experience of mining practices connotes that this can only be carried out by State mining, i.e., controlled and worked by the civil service of the country. This would mean excess work for Government Mining Engineer, State Geologists, and probably the Minister of Mines. 2. Reliable statistics would be produced as regards costs per ounce, or per ton. 3. To prove or disprove new methods and processes of working mines and recovery, etc. 4. To run the Cinderella as a "star" mine, i.e., as the newest and most up-to-date mine, [illegible] efficiently, economically and humanely. Finally, the writer maintains that what proved or caused the Cinderella's downfall was the want of air. It died for want of breath. I mean there was no scheme of ventilation. The public, new and old, must not forget that the Cinderella commenced working or rather production by an act of the Minister of Mines, by an act of grace he relaxed the two-shaft provision for producing, provided that work was being pushed ahead with the second or auxiliary shaft. This work was almost completed, when suddenly the mine shut down. The Government, I fancy, could have held the company to its agreement to complete the connection. However, that is by the way. The point is, that to have a natural air ventilation scheme on these fields two shafts are required. Thus it will be readily understood by the lay mind that the Cinderella miners lived on compressed air. Few are alive to-day. The mine made many widows and orphans, and under Miners' Phthisis Act 1919, i.e., the Sampson Act, the Cinderella is escaping its liability, and compelling other companies, i.e., other shareholders to pay. The default of the natural air ventilation scheme was followed by excessive high mine temperature, in turn causing lassitude and physical exhaustion. This is a chance for State mining to step in and inaugurate a ventilation scheme to be copied by others. The low efficiency of the Cinderella was due to want of ventilation. One could only live hard by the exhaust of a machine, the jackhammer and piston system were not known then. Mining has made great strides since then. The Cinderella closed down for want of a ventilation scheme—truly "it died for want of breath." I am, etc.,

L. P. SHERIDAN.

Mr. R. C. R[illegible], for many years manager of the Gandy Belt Manufacturing Company, Ltd., has resigned from that position, and has joined the firm of Messrs. McDonald Forman & Company, Ltd.

Future of Vereeniging Estates.

INCREASED CAPITAL—COAL MINES TO BE PURCHASED—FARMING, MINING, AND REAL ESTATE INTERESTS REVIEWED.

The twenty-fourth ordinary general meeting of the shareholders of the Vereeniging Estates, Limited, was held in the Board Room, Lewis and Marks Building, Johannesburg, on August 3. Mr. Julius Weil presided, and there were also present, or represented by proxy, Messrs. Isaac Lewis, Barnet Lewis, Louis Marks, Hendry D. Lewis, Gilbert Roy Lewis, Theodore Marks, William Mallinson, F. A. E. Wells, H. J. Dewdall, G. F. Ayling, C. B. Kingston, R. W. Townsend, L. First, W. A. Norris, D. L. H. Lavenstein, W. H. Bond, A. Bird, H. A. Laycock, S. J. Murley, F. Shipton, B. Lowndes, the African and European Investment Co., Ltd., the Estate of the late Samuel Marks and the Secretary. The Chairman declared the meeting duly constituted, and the Secretary read the notice convening the meeting. The minutes of the twenty-third ordinary general meeting of shareholders held on August 19, 1922, were taken as read, confirmed and signed. The Secretary read the auditors' certificate as shown on the accounts submitted. The Chairman, in moving that the directors' report and accounts for the year ended December 31, 1922, be adopted, said: Gentlemen, I regret that Mr. Isaac Lewis, your chairman, is again unable to preside to-day, being engaged in London in connection with your company's interests. The directors' report and the audited statement of accounts for the year ended December 31, 1922, are before you, and I presume you will as usual wish to take them as read. You will see from the accounts that the gross profit for the year 1922 was £27,206 18s. 1d., as compared with £31,164 13s. 11d. for the year 1921. This reduced profit of £3,957 15s. 10d. was entirely due to the unfortunate rebellion and general strike, which paralysed the trade of the Union for the first three months of the year. The Cornelia Colliery shows a reduction in profit for the year of £6,308 2s. 7d., also entirely due to the strike, notwithstanding that the working costs are the lowest on record and to which I shall refer more particularly later on.

Dividend Declared.

On May 11 last your directors declared a dividend at the rate of 2½ per cent., free of South African dividend tax, payable to all shareholders registered on May 31, 1923. The payment absorbed £25,634 8s. 6d., leaving the amount of £2,238 19s. 2d. carried forward to next balance sheet. I think you will agree that, taking into consideration that for three months of the year all industries were practically at a standstill, we must be very thankful that we were able to pay a dividend at all. Whilst not wishing to be unduly optimistic, I think that unless something unforeseen occurs we shall be able to do better in this respect next year. The returns for the current year to date more than justify me in making this statement.

Farming Operations.

The farming operations, taken as a whole, were again disappointing, but, as mentioned in the report of the directors, your company having ceased farming operations in the Transvaal, this will not recur. As I informed you last year, your directors decided to cut up the Transvaal farms into plots of approximately 600 acres each. The farm Vyffontein was the first to be divided, and the result was so satisfactory that six other farms have been similarly dealt with. These seven farms have been cut up into 51 portions, of which 33 have already been leased to first-class tenants. Each portion is fenced and a decent dwelling house provided, together with water supplied by windmills from boreholes. By leasing instead of farming the land the heavy losses at times made by the company farming will be eliminated, and a sure and steady income assured. There is a good living for a farmer to-day, but he must be hard working and give his personal attention to everything that has to be done. To do this the area leased must not be too large. It is the experience of your directors that a man engaged in agriculture cannot profitably look after more than 600 to 800 acres himself. That is the reason, with few exceptions, that your farms are being divided into 600-acre plots. Where the soil is not quite so good, or where pastoral operations are carried on, the area leased is somewhat larger.

Excellent Sheep Results.

The past year's sheep farming again gave excellent results, and showed a splendid return on the capital invested. This department is being extended to make the

VEREENIGING ESTATE ENTERPRISE.

Silos, Elevator and Works of the Vereeniging Milling Co.

able management of Mr. A. Husband, and great credit is due to him for bringing the flock to its present high standard. Although good prices were realised for last year's clip, there is every indication that better prices will be paid for the next clip. In the opinion of the [illegible] the weight of wool per sheep will average over a pound more than last year, and will yield 8½ lb. per sheep. With wool at 2s. per lb. this gives a return of 17s. per sheep, which, I think you will agree, is very satisfactory. Our Schoongezicht-bred rams are becoming well known, and are in good demand. We have at present a few hundred merino rams and pure bred ewes, which will be offered for sale at [illegible] next month, and these should realise an average price of £5 each for flock rams and £15 each for stud rams. It is very difficult to buy good sheep, and your company is now in the happy position of being able to supply all its own requirements and to offer its surplus to other farmers.

Maccauvlei Forests and Orchards.

Excellent rains falling at seasonable periods resulted in a marked growth of timber. The rainfall was close on 29 inches, only a little above the average, but it was its even distribution which did so much good to the trees. As you will probably remember, I informed you last year the rapid growth of the trees necessitates continuous thinning, and this must be proceeded with before the cutting of the trees on a commercial scale can be proceeded with. Very shortly, however, a much larger quantity of timber will be handled, [illegible] of commercial value. Climatic conditions being so favourable, the forest was extended by sowing *in situ* [illegible] acres Pinus pinaster, equal to 26,000 trees, and by planting out a further 9,000 gums and 5,000 arizonicas. The apple orchards are in splendid condition, and go to prove that the trouble and care exercised in keeping the trees free from pest and disease are amply repaid. The crop this season realised over £6,000. It may interest you to know that a portion of the older orchard of 200 25-year-old trees produced 2,000 bushel boxes of apples, equivalent to 45 tons. These 200 trees brought in a gross return of £8 per tree. These, of course, are the heaviest bearing trees, but it is only a matter of time for all the trees (9,000) to come into full bearing, and this will add greatly to the income of your company.

Coal Interests.

Your Directors have been considering means of further expanding your important coal interests, and have now adopted a scheme which will considerably enlarge the company's activities and scope in this respect. After the most exhaustive investigation and guided by the considered opinion and expressed recommendation of Mr. Isaac Hodges, the general manager of your collieries, the Board decided to acquire the Largo Colliery in the Springs district, and the Schoongezicht Colliery in the Witbank district, in order to give such varieties of quality and advantageous points of supply as would enable the combination to successfully compete for all classes of trade in the whole of the Transvaal, Orange Free State and Cape Colony, as well as export and bunker trade at Delagoa Bay and Capetown. As you are well aware, Cornelia Colliery produces a low value coal, of about 10·7 calorific value, suitable for steam-raising purposes in large power stations (about 40,000 tons per month being supplied to the Vereeniging Power Station) and for household purposes, but unsuitable for railway locomotives and for the export and bunker trades.

Coal Position.

Largo Colliery produces a medium value coal of about 11·5 calorific value, very suitable for steam-raising purposes at large power stations (about 40,000 tons per month being now supplied to the Brakpan and Simmer Pan Power Stations with requisitions for 50,000 to 55,000 tons per month as soon as this colliery can supply), and a good class household coal with a very profitable local trade on the East Rand. Schoongezicht Colliery produces a high-class locomotive and export coal of 12·5 calorific value (a ten years' contract for a minimum supply of 15,000 tons per month having been made with the South African Railways, and a shipping contract with the [illegible] Exporting Company, both contracts giving every satisfaction) and a high-class household coal for the Pretoria and Witwatersrand markets. The combination of these collieries (Cornelia in the Vereeniging district, Largo in the Springs district, and Schoongezicht in the Witbank district), able to supply all grades of coal to all consumers from the most advantageous geographical positions, gives an unassailable advantage over other competitors, and, in addition, this combination of collieries, now all under your control, will eliminate competition between themselves, and, by reducing standing charges, considerably cheapen the cost of supervision and management. I think it may be useful and interesting to you if I summarise the position and activities of these collieries.

Cornelia Colliery.

Cornelia Colliery is situated on the Orange Free State side of the Vaal River, and is connected with the South African Railways at Viljoen's Drift Station. The growth of the colliery is shown by the following statement of progressive outputs:

Year	Sales Tons.
1911	262,076
1912	296,706
1913	338,321
1914	415,496
1915	508,428
1916	538,363
1917	592,413
1918	581,296
1919	595,580
1920	645,412
1921	646,994
1922	*532,109

* Reduction due to strike and revolution during first three months of year.

The present output is at the rate of about 55,000 sales tons per month, the record output of 57,607 sales tons being obtained in the month of August, 1922. The principal consumer is the Victoria Falls and Transvaal Power Company for their power station at Vereeniging; the tonnage supplied being:—

Year	Tons.
1912	35,790
1913	249,951
1914	345,037
1915	383,445
1916	373,877
1917	415,286
1918	417,808
1919	422,738
1920	438,958
1921	452,215
1922	*376,686

* Reduction due to strike and revolution during first three months of year.

1923—	Tons
January	39,384
February	38,569
March	39,954
April	38,515
May	42,691
June	35,053

Local Industries Supplied.

Naturally all the local industries at Vereeniging are supplied from Cornelia Colliery (the Vereeniging Brick & Tile Co., the Union Steel Corporation, the Rand Water Board, the Vereeniging Milling Co., the Lime Works and the Municipality), and the advantageous position of Cornelia Colliery in relation to the Witwatersrand and the Orange Free State enables a substantial trade to be done in the supply of household coal to Johannesburg and the Reef towns, Kimberley, and also to Bloemfontein and the Orange Free State generally. Considerable economies have been effected by the larger use of compressed air coal cutters and reductions in the cost of pumping. The colliery is thoroughly well equipped with electric generating plants, air compressors, crushers, screens and sidings and railway connections, as well as a large village of married and single quarters, and recreation room for the Europeans and compounds, hospital and recuperating rooms for the native employed.

Camp Colliery.

This colliery was sunk in the year 1913 on the Transvaal side of the River Vaal in the "camp" adjoining the Union Steel Works and the Victoria Falls Power Station, and has two shafts, the Downcast (winding) shaft, 18 feet diameter, and the Upcast shaft, 10 feet diameter, lined throughout with brickwork in cement. The purpose of this colliery was to win coal from the Maccauvlei coal field on the Orange Free State side of the river, which coal field is practically unlimited in extent, and is of good thickness and quality. A tunnel 11 feet wide by 6½ feet high was driven from the bottom of the winding shaft through dwyka conglomerate and dolomite on the Transvaal side of the river, passing under the River Vaal in impervious coal measures strata into the Orange Free State, a distance of 3,251 feet, when operations were suspended as a result of the war conditions then obtaining. When this colliery is reopened it is intended to continue driving the tunnel through the Maccauvlei coal field to join the main roads of Cornelia Colliery. This joining of Camp and Cornelia Collieries by main roads through the Maccauvlei coal field will ensure a joint capacity of upwards of one million tons output per annum, with the advantages of decreased cost of management and standing charges, economy in the use of compressed air and electric power in mining, hauling and pumping, and an easy transference of labour and material to any section of either colliery whenever required, with immense improvement to the ventilation of the underground workings of both collieries.

The Equipment.

The colliery is equipped with brick heapstead and steel-girder headgear, winding engine and air compressor. The boiler-house plant consists of eight 300 h.p. Stirling boilers, for a working pressure of 160 lb. per square inch, complete with boiler-feed pumps, feed-water tanks, reservoir to hold 250,000 gallons, and two steel fire-brick-lined chimneys 130 feet high by 5 feet diameter. The colliery is connected by a private railway to the S.A.R. main line at Vereeniging Station, and to the Vereeniging Power Station of the Victoria Falls Power Company, and, when completed, coal from this colliery can be delivered into the bunkers of the power station by the colliery locomotive, thus saving the whole cost of the present railage from Viljoen's Drift to Vereeniging. Offices are built, and a native compound to accommodate 500 natives, with ambulance room, dispensary, compound manager's office, stores, cook-house, etc., is ready for occupation. The whole of the machinery and plant at this colliery is being maintained in good working condition, so as to be ready for starting up whenever trade conditions justify the expenditure on the railway sidings, screening plant, workshops, etc., required to complete the equipment.

Schoongezicht Colliery.

Schoongezicht Colliery is situated in the Witbank district of the Transvaal coal field, being 2¾ miles from Witbank Station on the Delagoa Bay—Pretoria main line of the South African Railways, and is immediately contiguous to the well-known Transvaal and Delagoa Bay, Middelburg Steam, Coronation, Witbank and South African Coal Estates Collieries. The freehold farm contains 6,020 acres, of which upward of 2,000 acres is coal-bearing. A shaft was sunk in the year 1921 on the south-eastern portion of the estate, immediately adjoining the Witbank and South African Coal Estates boundaries, from which about 700 acres of the coal field, containing approximately 10,000,000 tons of saleable output, will be worked. A railway station has been built on the South African Railways' main line, named Schoongezicht, and a railway connection with accommodation sidings has been constructed there to deal with an output of 500,000 tons per annum. The colliery is at present equipped for a sales output of 30,000 tons per month, winding commenced at the beginning of the year 1922 and the growth of the colliery is shown by the following statement of monthly output:

MONTHLY OUTPUT.

	Tons.
January, 1922 .	6,542
February	5,064
March .	6,966
April . .	6,742
May .	9,738
June	9,114
July .	10,961
August ...	16,234
September	18,378
October	20,225
November	23,740
December	25,685
	159,689
January, 1923	28,836
February	25,876
March .	26,820
April .	27,153
May	29,200
June .	26,788

The mining profit for the four months of this year was at the rate of £5,000 per annum, but when the colliery is completely equipped the reduction in working costs will increase the profits to £10,000 per annum on the same output, with considerably larger profits as the scale of operations increases. The coal being worked at the colliery consists of a high quality seam about 5 feet thick of clean coal having a calorific value varying from 12·75 to 13 lb. per lb., immediately overlaid by a seam of about 20 feet thick, of which the lowest, 7 to 8 feet, gives a calorific value of 12·5 lb. per lb. (the two seams being separated by only a few inches of sandstone parting), the combination making a very thick seam of high class steam and shipping coal fully equal to the Transvaal standard of export trade, which can be cheaply worked by modern coal-cutting appliances.

Largo Colliery.

Largo Colliery is situated on the farm Grootvlei, in the Springs district, and is intended to work the whole of the coal field on the farms Grootvlei and Palmietkuil. The colliery is joined up to the South African Railways main line from Witbank to Germiston by a private railway about 2½ miles long connecting at Welgedacht Station. The coal field covers 2,582 acres, and three shafts were sunk in the year 1919 (winding shaft, upcast shaft and ladder-way shaft), winding commencing at the beginning of the year 1920, the growth of the colliery being shown by the following statement of outputs:—

	Sales Tons
1920 .	189,444
1921	348,173
1922	373,673
1923	
January	42,130
February	38,002
March	41,575
April	40,291
May	43,352
June	44,310

The principal consumer is the Victoria Falls Power Company, who take practically the whole of the requirements for their Brakpan and Simmer Pan power stations from this colliery. As the Victoria Falls Power Company's demands for coal increased and requisitions were made for a total requirement of 50,000 to 55,000 tons per month, it was decided to sink an additional pair of shafts, named "B Winning," and these shafts are now being sunk and equipped for our additional tonnage of 20,000 tons per month.

Driven Electrically.

The whole of the equipment is driven electrically from power supplied by the Victoria Falls Power Company, and by the end of this year the colliery will be completely equipped for a daily tonnage of 60,000 tons per month. The consideration payable by your company for the assets of Largo and Schoongezicht Collieries was 185,000 fully paid shares in your company and a liability of £195,000. To enable this transaction to be completed it was necessary to increase the capital of your company, and this was done on June 4 last, the capital being increased by the creation of 200,000 shares of £1 each. The capital of your company is now £1,200,000 in £1 shares, of which 1,189,107 shares are issued and the balance of 10,893 are held in reserve. You will be asked to confirm the directors' action in this matter.

Vereeniging Brick and Tile Co., Ltd.

In common with all other industries, this subsidiary company suffered from the rebellion in the early part of the year. Notwithstanding these adverse conditions, a fair profit was made. This year, however, trade conditions show a distinct improvement. The works are running full time and have orders on hand to keep them fully occupied for many months to come. For the six months ended June 30 last the sales amounted to £40,000, as compared with just half that figure for the corresponding period of last year. The quality of the goods manufactured, for which this company holds a high record, has never been better. The outlook is distinctly encouraging. Your company owns the whole of the shares of this company.

Vaal River Barrage.

As you are aware, the opening of the Vaal River Barrage was performed by His Royal Highness Prince Arthur of Connaught a week ago to-day. To give you some idea of this magnificent waterway, I cannot do better than quote some of the particulars furnished by Mr. W. Ingham, M.Inst.C.E., M.I.Mech.E., chief engineer of the Rand Water Board, who designed and constructed this wonderful reservoir. The construction of this barrage across the Vaal River, 25 miles down-stream below Vereeniging, has created a storage reservoir capable of impounding 13,633 million gallons of water. Length of reservoir, 40 miles; greatest width, 4,000 feet; depth of water at barrage, 25 ft. 1 in.; depth of water at Vereeniging, 17 ft.; approximate total cost of scheme, £1,320,400. Of the total cost no less than £272,229 has been spent in Vereeniging in the construction of the main pumping station, service reservoirs, precipitation tanks, railway sidings, staff quarters, etc. The plant and buildings are of an imposing appearance, and add greatly to the beauty and importance of the town.

Enhanced Value of Farms.

It is, however, the enormously increased value of all your farms, and more particularly your river farms, to which I would draw your attention. You have 65,000 acres of ground riparian to the reservoir. The potentialities of the district can hardly be imagined, and to more clearly indicate what I mean, you must realise that your company has a river frontage of approximately 50 miles with an average depth of water of 17 feet. How many towns in South Africa are situated as Vereeniging is to-day? It has established on the banks of the Vaal River collieries, steel works, power station, brick, pipe and tile works, maize mills, with coal, lime, sand, clay, timber in practically unlimited quantities. It has taken years to build up and develop the town and its industries, and the shareholders have patiently waited and have been content to put back for the development of their property the profits derived from the various undertakings. To-day you are able to see the soundness of this policy. You have assets which will compare favourably with those of any company. The handsome bridge erected by the Government over the Vaal River at Vereeniging, connecting the Transvaal and Orange Free State and thus linking up a number of important towns with Vereeniging, was opened to traffic some months ago.

Pleasure Resort.

Realising the advantages that would accrue to your company by popularising the town as a pleasure resort, your directors decided to erect a handsome tea kiosk and refreshment room, with dressing rooms, etc., on the banks of the river. Tennis courts have also been laid out and a number of motor and rowing boats placed on the river. This has been the means of attracting a large number of people from Pretoria, Johannesburg, and other large cities, and thus bringing forcibly before the public the potentialities of your estates. The time is not far distant when Vereeniging, in addition to being the industrial centre, will also be the most popular inland holiday resort in South Africa. Confidence in the permanent prosperity of the district is reflected by the amount of building that is going on in the town. Not only has a large number of shops and dwelling houses been erected during the past twelve months, but what is more noticeable is the improvement in style. Handsome brick buildings, with tiled roofs, are replacing the older shops, and these new shops are occupied by leading Johannesburg firms. The new Town Hall, a handsome building costing £16,000, is completed, and will be opened on the 15th of this month. The foundation stone of the new English Church was laid by His Royal Highness Prince Arthur of Connaught last week, and will be a building worthy of the town. The directors have again much pleasure in placing on record the Board's appreciation of the services rendered to the company by its officials and staff. I now beg to move the adoption of the directors' report and accounts.

Bcard's Actions Approved.

Mr. T. Marks seconded the chairman's motion, which, on being put to the meeting, was carried unanimously. Mr. Marks also moved and Mr. R. W. Townsend seconded that the action of the directors in declaring on May 11, 1923, a dividend at the rate of 2½ per cent., free of South African dividend tax, to all shareholders registered at the close of business on May 31, 1923, be and is hereby confirmed. Mr. H. J. Dowdall moved and Mr. L. First seconded that the action of the Board on June 4, 1923, in raising the capital of the company by £200,000, bringing the registered capital to £1,200,000, be and is hereby confirmed. Mr. L. H. Lavenstein moved and Mr. H. J. Dowdall seconded that the action of the Board on June 29, 1923, in purchasing the assets of the Largo Colliery Co., Ltd., and the Schoongezicht Collieries (Witbank), Ltd., be and is hereby confirmed. All these were carried unanimously. No other nomination having been received, the Chairman declared the retiring directors, Messrs. Isaac Lewis and Louis Marks, duly re-elected. Messrs. Douglas, Low and Co., the company's auditors, were declared re-elected, no other nomination having been received. The fee for the past audit was left in the hands of the Board to fix. The meeting terminated with a vote of thanks to the chairman.

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July Output: Group Returns.

ANGLO-AMERICAN GROUP.

The following are the results of operations for the month of July, 1923:—

	Tons milled	Working Costs per ton milled s.	d.	Value of Gold Declared £	Yield per ton s.	d.
Brakpan ...	66,000	21	11·1	115,319	34	11·3
Springs . .	54,200	22	8·9	104,657	38	7·4
Totals and averages	120,200	22	3·5	£219,976	36	7·2

	Working Profit based on standard value of Gold: Total £	per ton s.	d.	Estimated Premium taking gold at £4/9/3 per fine oz. less Exchange on Remittances £	Total Estimated Profit £
Brakpan	42,957	13	0·2	4,749	47,706
Springs	43,035	15	10·5	4,635	47,670
Totals and averages	£85,992	14	3·7	£9,384	£95,376

BARNATO GROUP.

The following are the results of operations at the Barnato group of mines for the month of July, 1923:—

Mine	Tons Crushed.	Revenue from Gold. £	Total Working Costs. £
Government G.M. Areas . .	149,000	279,156	131,303
Langlaagte Estate	97,300	126,751	94,725
New Primrose	21,000	19,219	17,915
Randfontein Central ...	196,000	225,512	186,688
Van Ryn Deep .. .	63,000	123,814	61,660
Witwatersrand ..	39,200	46,533	41,031
Totals and averages ..	565,500	820,985	533,322
June totals . ..	570,700	829,534	543,831

Mine.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue £
Government G.M. Areas ...	17·624	149,286
Langlaagte Estate	19·471	32,455
New Primrose	17·062	1,454
Randfontein Central ...	19·050	40,191
Van Ryn Deep	19·575	63,057
Witwatersrand . .	20·934	7,367
Totals and averages ...	19·038	293,810
June totals . .	19·058	290,735

New State Areas.—During July 30,170 tons were crushed and 4,539·237 ozs. of gold were recovered. The plant continued to absorb gold during the month, but it is now in good condition

The above results are arrived at by calculating the gold at £4 9s. 3d. per fine oz.

TRANSVAAL GOLD MINING ESTATES.

The following are the particulars of the output for the month of July, 1923, in respect of the above company:—Central Mines: Tons crushed, 11,900, yielding 3,971 fine ozs. Elandsdrift Mine: Tons crushed, 1,800, yielding 1,084 fine ozs. Vaalhoek Mine: Tons crushed, 2,100, yielding 727 fine ozs. Estimated value of month's output, £25,338; estimated profit for the month, £4,189. The gold output for the month is valued at £4 7s. 3d. per fine oz. net after allowing for exchange and realisation charges.

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining/Rand Mines group for the month of July, 1923:—

Company.	Tons Crushed.	Yield in Fine Gold Oz.	Estimated Value.	Estimated Profit.	Estimated Working Cost per ton.
City Deep ...	100,000	41,430	£181,255	£66,791	22 10
Con. Main Rt.	52,500	18,538	80,930	11,039	25 5
Crown Mines .	218,000	67,510	295,355	87,308	19/ 1
Dur. Rood. Dp.	31,700	10,364	45,179	3,375	26 4
E.R.P.M. ...	130,000	29,450	128,857	*4,213	20 5
Ferreira Deep .	29,500	8,238	36,011	3,766	21 10
Geldenhuis Dp.	57,800	13,579	59,273	480	20/ 8
Modder B. ...	66,000	31,787	139,067	74,057	19 8
Modder East .	28,000	11,196	48,809	15,624	23/ 8
New Modder .	118,000	54,766	241,044	146,154	16 1
Nourse Mines .	47,800	14,109	61,725	8,750	22 2
Robinson .. .	13,400	3,552	15,538	4,520	16 5
Rose Deep .	56,100	13,330	58,321	12,286	16 4
Wolhuter... ...	30,600	7,541	32,991	3,420	19 3
Village Deep .	49,700	16,549	72,102	10,792	24 9
Tls. & avgs.	1,029,100	341,939	1,496,787	446,189	20 5

*Loss.

East Rand Proprietary Mines.—Loss due to abnormally low yield per ton milled.

Ferreira Deep.—Results were adversely affected owing to shortage of native labour.

Geldenhuis Deep.—Loss chiefly due to lower tonnage milled.

General Note.—The valuation of gold has been taken at £4 9s. 3d. per fine ounce, less 1s. 9d. for exchange and realisation charges.

UNION CORPORATION GROUP.

Particulars of the operations of the companies of this group for the month of July, 1923:—

Company.	Tons Crushed.	Fine Ozs.	Revenue (Including Sundry Rev.) Total
Geduld Proprietary .	67,500	23,564	£105,690
Modder Deep	44,200	23,731	106,477
Totals and averages ...	111,700	47,295	£212,167

	COSTS.		PROFIT. (including) Sundry Rev.
Company.	Total.	per ton.	Total.
Geduld Proprietary .	£64,891	19/3	£40,799
Modder Deep	£39,257	17/9	£67,220
Totals and averages ...	£104,148	18/8	£108,019

The above results are arrived at by valuing gold at 89s. 3d. per fine ounce.

WITWATERSRAND DEEP.

The estimate of results for the month of July, 1923, is as under:—Tons milled, 42,600; gold recovered, 11,909·038 ozs.; average of stamps running, 190; stamps running time, 26·537 days; tube mills, 5. The working expenditure, including head office charges, for the month is £43,085, or 20s. 3d. per ton. The estimated working revenue, based on an estimate of £4 9s. 3d. per fine oz. (less 1s. 9d. realisation charges), is £52,559, or 24s. 8d. per ton. The net estimated working profit is £9,474, or 4s. 5d. per ton, from which is to be deducted the capital expenditure for the month of £765, leaving a surplus of £8,709.

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TOPICS OF THE WEEK.

London a Free Gold Market.

According to a cable from Mr. F. W. Hirst to the "Star" this week, the removal of the embargo upon gold shipments from London has become, in the opinion of many eminent economists, a policy now worthy of the closest consideration. An article by a well-known authority on the subject is presented in another part of this issue. It is argued in London that there are several nations whose finances will permit of an immediate return to the gold standard, and that Great Britain is not the least among them in importance. The chief reason adduced is that the more stable nations of Europe, such as Sweden, Holland and Switzerland, are waiting for a lead from England. It is further pointed out that as British and American prices are at approximately the same height, and as, including "invisible" items, Great Britain possesses an export surplus now being employed in investment overseas, it could remove the embargo upon the export of gold without exposing itself to any serious drain upon its reserves. Against this we note that the "Review" issued by the Westminster Bank—one of the "Big Five"—says, in summing up the case for and against: "If we took the plunge and then found it necessary to draw back and once more prohibit the export of gold, the effect on the world might be little short of disastrous. For these reasons, although in many respects the position was never more favourable for a return to the gold standard, those in authority would do well to consider the problem in all its bearings, and not take any action which afterwards might prove to have been too precipitate."

Vereeniging Estates.

The wisdom and foresight of Mr Isaac Lewis and the late Mr. Samuel Marks are reflected in the successful record of the Vereeniging Estates revealed at the annual meeting, which is fully reported in this issue. Year by year the assets of the company increase in value and the future of Vereeniging as a great industrial centre becomes more assured. The opening of the new Vaal River scheme of the Rand Water Board the other day gave the town a unique advertisement and the directors of the Vereeniging Estates have shown no lack of enterprise in making the most of their opportunities. The land and real estate assets of the company are being systematically developed, and the extensive coal interests are being worked to ever-increasing advantage. Shareholders will need to study all the details given in the chairman's speech to realise the full potentialities of their holdings, and they can justly claim to be playing an important part in building up the industrial future of the country.

The Grading of South African Coal.

Elsewhere in this issue we reprint from the "Government Gazette" the regulations framed under the Coal Act, 1922, to govern the grading of South African coal. The Act, it will be remembered, provides for the inspection and grading of coal produced in the Union which is intended for export beyond the Union or for bunkering steamers in South African ports, the prohibition or restriction of the export and bunkering of coal when the demand for coal consumption within the Union warrants it, and the safeguarding of the supply of coal for public utilities. The Act also provides that if the South African Railways and Harbours Administration is at any time unable to make satisfactory contracts for securing the coal required for test purposes, by reason of a scarcity of available coal or of any combine, etc., or concerted action or the like between collieries, it shall have power under certain specified conditions to call upon the collieries which supply coal considered by it to be suitable for its requirements, to deliver such coal in proportion to the total amount sold by each colliery. The Administration may also, if it finds itself at any time temporarily short of coal for its purposes, intercept and apply to its own uses any suitable coal which may be in transit, subject to certain conditions specified in the Act. Clause I provides that after the expiry of six months from the commencement of the Act, no coal produced within the Union shall be used for export or for bunkering, unless it has been graded and a certificate in the prescribed form granted in respect thereof. Other clauses relate to the appointment of Grading Committees and method of grading, temporary prohibition of export, penalties for contravention of any provisions of the Act or any regulation prescribed therein. The regulations now promulgated, it will be seen, are merely designed to give effect to the spirit and intention of the Act.

The E.R.P.M. and the Cinderella.

Mr. D. C. Greig's proposal to the Government to finance the re-opening of the Cinderella will be supported by a deputation to the Minister of Mines next Monday. Mr. Greig has been most successful in eliciting the views of all sorts and conditions of people on the subject, and he has certainly awakened public interest in what is undoubtedly an important matter. Though the Government has already expressed its views pretty plainly in regard to it, the hope is still entertained that Mr. Malan may make some announcement of importance next Monday. We print further correspondence in regard to the Cinderella this week. Meanwhile, perhaps, it may be pointed out that no one seems to take into account the attitude of the controlling house towards the Cinderella, and it may be only fair at this juncture to quote from the chairman's remarks at the last annual meeting, the following passage: "At the last annual meeting your chairman expressed a hope that within a reasonable time conditions might be favourable for formulating a scheme for the resumption of operations on your mine. That time, however has unfortunately not yet arrived, and, to say the least, will not be hastened by the attitude of the Union Parliament on the subject of phthisis legislation, coupled with the vagaries of the Transvaal Provincial Administration with regard to taxation. We have been subjected to more or less irresponsible criticism from time to time for not re-opening the mine, but you may rest assured that your directors are leaving no stone unturned to effect this object as soon as some reasonable scheme can be devised for that purpose, either in conjunction with our neighbours, the East Rand Proprietary Mines, or on our own account. The balance sheet and directors' report show that close upon one and a quarter million pounds sterling have been spent on shaft sinking, development, machinery and plant, etc., apart from £311,054 in respect of claims purchased for cash from 1910 to 1916. Surely these figures form a very practical demonstration of the faith of your board in the potentialities of the company—a faith which is still maintained notwithstanding the present dormant condition of the property—and must be of infinitely more real significance than the irresponsible criticism to which I have just referred. Clearly it is much more in the interests of your company to resume active operations than in the interests of any of the individuals or associated bodies who from time to time agitate for the re-opening of the mine."

The Chartered Company's Assets.

Now that the arrangement between the Crown and the Chartered Company has been approved by the shareholders, various calculations are being indulged in regarding the assets of the company. Some of these estimates are, to say the least, not strictly accurate and the directors have, therefore, issued a brief official statement on the subject. "According to the closest estimate which they can form," it is stated, "these assets stand approximately as follows:

Cash on hand and on deposit (about)	£150,000
Quoted investments (other than Rhodesia Railways Trust shares) at present market quotations	2,780,000
Unquoted investments at a conservative valuation	185,000
Debtors, less creditors . .	200,000
	£3,315,000
To which will be added on 1st October next payment from H.M. Government	3,750,000
	£7,065,000

In addition, the company will possess 1,732,055 Rhodesia Railways Trust shares—on these a dividend of 4 per cent., free of income tax, was paid on 14th June, 1923; mineral rights recognised by the Crown throughout Southern and Northern Rhodesia—the net income from these rights for the year ended 31st March, 1922, was £129,000; about 4,000,000 acres of land in Southern Rhodesia; about 2,500,000 acres of land in North-Eastern Rhodesia and a half-interest in the proceeds of land in North-Western Rhodesia for 40 years; about 600,000 acres of land in the Bechuanaland Protectorate; about 2,500,000 acres of land and 14,000 square miles of mineral rights in Nyasaland; and all its estates, township plots, buildings (other than administrative buildings), irrigation works and live stock." This official calculation is in several respects more favourable to the shareholders than had been anticipated. The value of the 1,732,000 Rhodesia Railways Trust shares owned may be considered as almost covering the £1,250,000 debentures which the Chartered Company has in issue. This leaves some £7,000,000 liquid and semi-liquid assets to cover the 8,937,500 £1 ordinary shares in issue. Then there are all the other non-liquid assets set forth in the above statement to be taken into consideration.

The Minister for Mines at Kimberley.

The Minister for Mines has had a busy week at Kimberley acting as deputy for the Prime Minister. As General Hertzog had only recently stumped the district, Mr. Malan naturally dealt with some of the many tongue-in-cheek utterances of that easy rhetorician, and had little difficulty in effectually disposing of them. Apart from purely political questions, Mr. Malan discoursed on several industrial and economic matters, and had much of interest to say. Touching on General Hertzog's address to the coloured people of Kimberley, Mr. Malan said he was surprised that nobody at that meeting asked General Hertzog what he thought about the colour bar, seeing that General Hertzog, in addressing the Witbank coal miners, had supported the maintenance of the colour bar on the Rand. Discussing segregation, Mr. Malan said the question of segregation as affecting ownership of land was finished, but there was talk now of industrial segregation. What was meant by that he did not know, but if it meant that in certain areas certain work was to be done solely by Europeans and in other areas solely by natives, that was an entirely impracticable policy. The Minister said the negotiations were at present proceeding in Kimberley with gentlemen from overseas for establishing a diamond-cutting industry there. He did not know whether the negotiations would come to fruition, but if such an industry was to be established he thought that Kimberley was the right place for it. Moreover, the Government were prepared to assist anybody who wanted to establish a diamond-cutting industry in South Africa legitimately under the Act of 1919. As for Mr. Tielman Roos's recent proposal in a speech at Barberton to prohibit the export of rough diamonds, he was convinced from his knowledge of the river diggings that such a measure would kill the alluvial digging, and he did not think that the Kimberley mines would long survive. He also looked forward hopefully to the development of irrigation in this part of the Union. Moreover, speaking as one without expert knowledge, he thought that Kimberley was a suitable place at which to establish works for converting poor grade cattle into meat extract, etc. Speaking of General Smuts's forthcoming participation in the Imperial Conferences in London, Mr. Malan said that the decisiveness of his views would depend on the support which he received in this country.

From these brief extracts it will be seen that the Minister for Mines is becoming imbued with something of his chief's eloquence, and that in the absence of the Prime Minister at the forthcoming conference in London, he can be trusted to carry on the business of Government with his wonted zeal and energy.

A Lesson for Labour.

In view of the time-honoured cry of "the mines for the miners," it is of interest to call attention to an interesting controversy which has arisen in the West Virginia coalfields. Situated in that area there is the actual embodiment of the ultimate aims of a section of miners' leaders—namely, a mine owned and controlled by members and officials of a labour union. One would imagine, therefore, that the working of such a mine would be as harmonious as Socialists would have us believe and would stand as a striking example to other trades unions. But such is not the case, and labour as an employer is looked on with more suspicion than maligned capital. From the "Financial Times" we learn that the property is that of the Coal River Collieries at Ashford, West Virginia, and is valued at $2,500,000, the stock being owned by members of the Brotherhood of Locomotive Engineers. The officers of the coal company are executives of the Railway Brotherhood. The mine is shut down because of a controversy with workers, who are members also of a trades union. The controversy is an interesting one, because the mine is located in a district where the mine workers are carrying on a campaign to force the unionisation of all properties not now controlled by the closed shop policy. There is no dispute over wages or working hours, and the labour owners will pay the mine workers the scale of wages fixed by agreement with the United Mine Workers, but they will allow no member of that august organisation in or about their mine. The employers, who are affiliated with a labour union as powerful as that of the United Mine Workers, will not accept the domination of the Miners' Union, presumably with the liability to be closed at any time by the calling of a sympathetic strike or a general strike in the coal mining industry. Here is a peculiar situation. One union, finding itself in the position of employers, prefer to shut up their mine rather than risk the savings of their members in an enterprise which would be at the mercy of another union. The Railway Brotherhood evidently do not believe in the solidarity of labour, and "all for each and each for all" apparently only applies when one fellow has something which the other fellow has not. It is strange how possession makes all view matters from a different angle. Selfishness is a human frailty, but one does not expect to find it glaringly accentuated by those who prate of the brotherhood of unions. If the mines were owned by the members of the miners' unions there would still be trouble either in the division of the spoils, if any, and by their ideas as to how much the community should pay for the coal produced.

Congo Mining Progress.

An important despatch on the progress of mining in the Congo from our Special Commissioner appears in this issue. Simultaneously with it we have received an advance copy of the annual report of the Tanganyika Concessions, Ltd., which confirms the cheerful views taken by our Special Commissioner. The report of Tanganyika Concessions, covering eighteen months to 31st December, 1922, it is true, shows a loss for the half-year to December, 1921, of £15,711, and a loss for the year 1922 of £43,870, making a deficit on the eighteen months' working of £59,581, which, deducted from the credit balance on profit and loss account of £275,002, leaves £215,421 to be carried forward. There was a loss on exchange during the past year of £6,372. The directors state that since the close of the financial year the Union Minière has declared a dividend of 35 francs a share in respect of 1922, but the Tanganyika Company's quota of this dividend is not included in the accounts. In May, 1922, the capital of the company was increased to £3,500,000; 750,000 10 per cent. cumulative preference shares were issued at the date of the balance sheet and 100,000 shares have since been issued. A translation of the directors' report of the Union Minière du Haut-Katanga for 1922 accompanies the report, and shows that, notwithstanding the low price of copper ruling during the greater part of the year, gross working results amounted to about 48,000,000 frs., from which, after charging interest on Debentures, etc., substantial amortisations were provided. The mining and metallurgical operations of the Union Minière continue to show satisfactory progress. The copper output for 1922 reached a new record figure of 43,362 tons, and it is expected that the production for the current year will be about 50,000 tons. During the past year a number of technical improvements have been effected and accessory installations added, the result of which has been to secure better efficiency and greater regularity in the running of the whole plant. With regard to the mines, the drilling operations for the development of new ore bodies have been particularly successful, and a large deposit of high-grade ore, suitable for direct smelting, has been located at Ruashi, near the Star mine and in close proximity to the smelter. The ore reserves at 31st December, 1922, exceeded 68,000,000 tons, with an estimated copper content of 4,500,000 tons. With regard to the proposed installation of the leaching process, a test plant on a commercial scale has been in operation since November, 1921, and has successfully realised expectations as to the applicability of this process to various classes of Katanga ores. Plans and estimates are now being prepared for the erection of the first section of a large electrolytic leaching plant at the Panda. This first section will be run on steam-generated electric power pending the completion of the scheme for the capitation of the waterfalls on the Luffra or Luabala rivers. The tin mining operations at the Busanga mine during the year 1922 produced 670 tons of cassiterite, and the production is being regularly continued at the rate of about 60 tons per month. An electric furnace is being erected at the Lubumbashi works for the treatment of the cobalt ores. A most interesting subsidiary branch of the Union Minière's operations is the production of radium, now an accomplished fact, from the uranium ores found in Katanga. The plant for the extraction of radium from these ores has been erected in Belgium at Oolen (province of Antwerp) by the Société Générale Métallurgique de Hoboken in conjunction with the Union Minière. The first radium was produced at the end of 1922, and operations are now proceeding on a scale of production of about 2 to 3 grammes of radium element per month.

Since the last meeting arrangements have been made to carry on construction work on the Benguella Railway, and a further section of about 100 kilometres has been built, in addition to which the equipment has been increased.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

* * *

Klerksdorp Gold Output.

The output for the month of June, as shown in the report of the Mines Department, of two large mines in the Klerksdorp district—presumably the Africander and Rietkuil Mines—was 839½ ozs., of the value of £3,566. Twenty stamps and one tube mill are registered as producing 13·190 ozs., value £56; and two old tailings and reduction sites, 21·566 ozs., value £91; a total of 874·286 ozs., value £3,713.

* * *

White's South African Cement Co., Ltd.

The report of this company for the year ended December 31, 1922, is highly satisfactory, resulting in a distribution of 12½ per cent., which will appear in the current year's revenue. In response to representations made, the Union Government and the Railway Department have so supported the local producers by anti-dumping legislation and reduced railway rates as to enable the cement manufacturers of South Africa to secure the trade to which they are justly entitled.

* * *

The Price of Copper.

A London correspondent writes:—"The standard copper market in London ruled firmer this week. Fully 1,000 tons changed hands at higher rates, special attention being given to the more distant positions. Near the close the market was inclined to waver, but sentiment is still fairly bullish again. The recession early in the week has now been more than made good, yesterday's final rates being a little over last week's closing prices. In some quarters there is still a disposition to take a bearish view of copper while liquidation is not yet finished, but the better feeling the last day or two encourages the belief that the metal will go higher once the political position is clearer and consumers come in again."

* * *

Mr. John Stroyan's Views.

In the course of his speech from the chair at the annual meeting of the S.A. Breweries, Mr. John Stroyan said:—"We are emerging from bad times, but much spade work is being done at present, in the prospect of the brighter future we are all hoping for. As I have told you on previous occasions, I know no country that recovers itself so quickly as South Africa. In most countries when a man has been knocked down financially, he has difficulty in recovering himself; the South African is never so enterprising or so full of energy or determination as when he has just emerged from very bad times pretty well stripped of all he possessed. Commercial conditions must, however, await the development of the political situation. We can never have real prosperity in even the outlying and remote parts of our Empire while Europe—in fact, the whole world—is in its present most unsettled state."

British Asbestos Chrome Co., Ltd.

The demand for asbestos, although greater than during last year, is still far below normal. Consignments of fibre are stored and will be realised when opportunity arises. The production of [illegible] fibre on the property is not proceeding at present, and the mine manager is now in England, as the directors considered it advisable to discuss with him the necessary steps to be taken for adjusting the milling plant so as to produce the grades of fibre most readily marketable. Inquiries for considerable quantities of chrome ore are being received from time to time, but in consequence of the prohibitive transport rates demanded by the Rhodesian railways, the company is unable to quote prices sufficiently low to secure the business. It is hoped that as a result of Representative Government in Rhodesia the authorities will be able to bring pressure to bear upon the railways which will result in such a revision of rates as will enable the chrome mines to compete for the trade available.

* * *

Rhodesia Broken Hill.

The report of Rhodesia Broken Hill Development Company for 1922 states that 47,461 tons were smelted, producing 20,501 tons of lead. Lead production for the first half of the current year was 6,258 tons. After allowing for local sales in South Africa the balance of the output for the year 1923 has been sold, based on the average market price of lead ruling during 20 market days after arrival. Development work at the 150 ft. level from the main shaft has allowed of a direct communication being established with the open workings by means of a pass from the open cut to the 150 ft. level. Pumps are now in a position to drain the water from the open workings. During the year No. 2 shaft was sunk a further 48 ft. to 167½ ft., and connection made with No. 1 shaft at 150 ft. level. The profit, after writing off £35,170 for depreciation on machinery, plant, etc., was £76,982, plus £62,749 brought in. The directors recommend a dividend of 10 per cent., less tax, on shares numbered 1 to 1,400,000, leaving, subject to corporation profits tax and directors' percentage of dividend, a balance of £104,731.

* * *

Bechuanaland Exploration.

The report of the Bechuanaland Exploration Company for the year ended 31st March, 1923, states that £11,090 has been received in dividends and profit on shares sold. The Rhodesia Broken Hill Development Company continued smelting throughout the year, and the output of lead was 18,285 tons, compared with 18,122 tons for 1921. The nominal capital of the company was increased to £1,000,000, of which £210,000 was issued to shareholders, the issue being guaranteed by this company for a commission of 1½ per cent. and calls upon 100,000 of the unissued shares terminating 30th June, 1924. An agreement was arrived at between this company and the Tati Company for the cancellation of 82,147 fully paid shares held in the Tati Company, this company to receive by way of return of capital 246,111 acres of land in a contiguous block (excluding mineral rights), together with territorial and other rights covering the southern portion of that company's territory adjacent to the Cape to Bulawayo main railway line. After providing £1,655 for development and depreciation, the net profit is £18,777, plus the amount brought forward, making £20,006. The directors recommend a dividend of 5 per cent., less tax, for the year.

* * *

Latest from the Sheba.

The London office of the Sheba Gold Mining Company, whose meeting held in London is reported elsewhere in this issue, has received the following cable from the consulting engineer, Mr. C. B. Kingston:—"Referring to my telegram of 30th, incline shaft now down to No. 10 level Intombi and No. 11 level Zwartzkopje; crosscut from shaft to Intombi completed; crosscut from shaft to Zwartzkopje ore shoot at No. 11 level now proceeding. This will allow rapid development new levels Zwartzkopje, where we expect to find extension of ore from 2a borehole winze, also the ore in each drive. No. 10 level Zwartzkopje and another promising fracture already partly exposed; No. 9 level raise completed; arrangements made increase stoping at this point. No. 9 level winze proceeding in 8-dwt. ore, and raise started in good ore from next level to connect winze to make further stopes available. Promising results obtained in hanging wall raise bottom 7 winze, but unable judge value of discovery yet. Necessity sinking incline shaft below No. 7 level to allow access to better ore has delayed development up to the present. Only now in a position to develop to advantage; will push on with the work vigorously; in the meantime everything possible is being done; thought it desirable to break from old stope and to make better ore in the lower levels available for stoping. Unexpected quantity arsenical pyrites embarrassing flotation plant, but testing with new reagent promises to overcome difficulty; everything possible is being done increase tonnage milled; expect steady improvement."

NEW KLEINFONTEIN CO., LTD.

The details of the operations of the New Kleinfontein Company's property for July are as follows:—Stamps, 200; days, 28; tube mills, 4; tons milled, 49,800; fine ounces output, 11,538; value, less cost of realisation, £49,831; working costs, £49,266; working costs per ton (excluding development), 18s. 9d.; development to working costs per ton, 1s.; total working costs per ton, 19s.; profit, £565; capital expenditure, nil. The revenue derived from gold for the month is calculated at the rate of £4 9s. 3d. per fine ounce.

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Your especial attention is directed to page 591 of the July 21st issue of the "S.A. Mining and Engineering Journal" dealing with boiler installations. The Baldwin Locomotive Works are the exclusive foreign agents of the LADD Water Tube Boilers referred to in this article.

We strongly urge serious consideration of Ladd Boilers for future power installations or increases in present plants and look forward to receiving your inquiries.

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The Week in the Sharemarket.

A GENERAL IMPROVEMENT—OUTLOOK BETTER—SOME LONDON BUYING.

The market has improved. Some buying came from London, which immediately had a refreshing effect on prices here. Corner House stocks have notably improved in the case of New Modders and Crown Mines. Nourse Mines are also better. Modder B have been picked up all through the week. The slight improvement has been general all round. Barnato stocks have been sluggish, except Langlaagte Estates, which are becoming popular. Randfonteins, which still continue to work so far below the grade of the mine, are regarded at the moment with suspicion by investors, who have become almost tired out. It is said, however, that better times are in store for the patient holders, and that time will justify the confidence of the directors. It is even hinted that an improvement is imminent. Springs Mines have been a feature of the Anglo-American Group. Brakpans continue in favour in view of the satisfactory way the mine is opening up. West Springs have been very steady and considerable progress is being made with the lay-out for the new plant. Of the Goldfields stocks, Robinson Deeps have been fairly well dealt in. Simmers, although the output for last month was disappointing, are still looked to for better returns. Modder Deeps have been a weak feature. There was a good deal of jobbing in the stock. Gedulds remained firm. The General Mining stocks have not been specially prominent, but from time to time there has been a little doing in Van Ryn Estates. Diamonds have improved slightly on London advices. Crown Diamonds, which, earlier in the week came back, have again hardened. Nothing has so far been revealed regarding the progress of the new plant. Transvaal platinums have had sales at 55s. There is too little news regarding this Syndicate to allow any reasonable estimate of its merits to be made. Investments have been much as usual. National Banks, however, are inclined to weaken. Reserve Banks have buyers at any lowering of the price. Loans have absorbed a good deal of business throughout the week. The general outlook is better. Both here and in London the market conditions are favourable to more activity.

	Fri. 3rd.	Tues. 7th.	Wed. 8th.	Thurs. 9th.
Anglo American Corporation	21 9*	21 9*	21 9	21 9*
Brakpan Mines	56 6*	56 9*		56 6*
Brick and Potteries	4 0*	—	—	4 0*
Bushveld Tins	0 3*	0 3*	—	—
City and Suburban	3 0†	—	—	—
City Deeps	50 0*	50 9*	51 0	50 9*
Clydeslade Collieries	17 3†	17 3†	—	17 3†
Consolidated Diamonds	19 3	19 0*	19 0*	19 6
Consolidated Main Reefs	9 3	9 0*	9 0*	9 6*
Coronation Collieries	27 0†	—	—	—
Coronation Freeholds	0 5*	0 5*	0 5*	0 5*
Coronation Syndicates	4 9†	4 3*	4 3*	4 9
Crown Diamonds	6 8*	6 9*	6 6*	6 5*
Crown Mines	47 6*	47 6*	47 6	47 6*
Daggafontein Mines	2 3	2 2*	2 2*	2 0
Durban Roodepoort Deeps	14 6*	—	—	14 0*
East Rand Coals	1 0*	1 0*	1 0*	1 0*
East Rand Deeps	0 7*	—	0 7*	—
East Rand Proprietary	4 3*	4 3*	4 3*	4 6*
Eastern Golds	0 3*	—	0 4*	0 4*
Frank Smith Diamonds	3 0*	3 0*	3 3	3 0*
Geduld Proprietary	58 6*	58 6*	58 6*	59 0*
Geldenhuis Deeps	4 0*	—	4 0*	—
Glynn's Lydenburgs	—	—	—	12 0*
Government Areas	110 6*	110 0*	110 0*	110 6*
Hume Pipes	8 0*	—	8 0*	7 6*
Lace Proprietary	7 6*	—	7 6*	—
Langlaagte Estate	22 4	22 3*	22 4*	22 9
Leeuwpoort Tins	4 2*	4 0*	—	4 4*
Lydenburg Farms	2 6*	2 6*	2 6*	—
Middelvlei Estates	1 1*	1 0*	1 0*	—
Modder B.'s	22 6*	22 6*	22 9	22 9*
Modder Deeps	39 3	39 9	39 6	39 6
Modder Easts	5 8	5 8*	5 6*	5 6*
Natal Navigation Collieries	—	—	—	26 0*
National Banks	121 0†	120 0*	120 0	125 0†
New Eland Diamonds	37 0*	37 0*	37 0*	40 0†
New Era Consolidated	6 10*	6 8*	6 10*	6 10†
New Geduld Deeps	0 6*	0 6*	0 6*	0 6*
New Kleinfonteins	4 3*	4 3*	5 0	—
New Modderfonteins	77 0*	78 0	78 6	78 6
New Promise	3 0*	—	3 0*	3 6†
New State Areas	31 6*	31 3*	31 3	31 3
Nigels	—	—	6 0*	—
Nourse Mines	13 6*	13 6*	13 6*	13 9*
Pretoria Cements	35 9*	35 6*	35 3*	35 6*
Rand Mines	—	49 6*	49 6*	49 6*
Rand Nucleus	1 0*	1 0*	1 0*	—
Randfontein Centrals	11 6†	—	—	11 9†
Randfontein Estates	18 6	18 9*	18 9*	18 10†
Rouxville Diamonds	1 0*	—	1 3†	1 3†
Roberts Victors	—	7 0†	7 0†	—
Robinson Deep "A"	31 6*	31 6*	31 9*	31 9*
Robinson Deep "B"	13 6*	13 3*	13 6*	12 6
Rooibergs	2 10*	2 11*	2 10*	3 3†
Ryan Nigels	4 0†	4 0†	2 6*	2 9*
Shebas	2 6	—	—	2 3*
Simmer and Jacks	2 10	2 10	2 10	2 10*
South African Breweries	30 0*	30 0*	30 0*	30 0*
South African Lands	3 6*	—	3 0*	3 6*
S.A. Reserve Banks	£125*	£125*	£131†	£125*
Springs Mines	44 9*	44 9*	45 0	45 9*
Sub Nigels	10 6	10 4	16 6	10 6
South African Alkali	10 6*	11 0†	10 6	11 0†
South African Townships	10 3*	10 3*	10 6*	—
Transvaal G.M. Estates	8 6	9 0	9 3	9 3
Transvaal Silvers	13 6	—	13 0	13 6*
Tudors	0 6†	—	0 6†	—
Union 5 per cent	£100*	£100*	£100*	£100†
Van Dyks	0 9*	0 9*	—	0 9*
Van Ryn Deeps	62 6	62 6*	62 6*	62 6*
Van Ryn Estates	12 9*	12 6†	—	12 9*
Village Deeps	11 0	11 0*	10 6*	11 0*
West Springs	19 3	19 3	19 0*	19 3
West Rand Consolidated	—	4 6†	3 6*	—
West Rand Estates	2 6†	2 6†	2 3†	2 3†
Witwatersrands	13 0*	13 0*	14 0†	—
Witwatersrand Deeps	13 6*	13 6*	14 0	14 0
Zaaiplaats Tins	4 11	4 9*	4 9*	4 11

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ENGINEERING SECTION.

Gas Driven Alternators for South Africa.

RHODESIAN COAL TO OPERATE A GAS ENGINE-DRIVEN CENTRAL POWER STATION.

It is natural that this contract for a gas engine-driven central station in a capital city in South Africa should have created much interest, and not in engineering circles only, in view of the sad experience with gas power in Johannesburg fourteen or fifteen years ago. For this reason the plant and the tests to which it has been subjected are somewhat fully described below.

A central station power plant which has many interesting features has recently undergone a series of tests at Manchester, and will shortly be erected on its permanent site at Salisbury, Rhodesia. It consists of two "Browett-Lindley" four-cylinder, vertical, four-stroke cycle gas engines, each direct coupled to a 300-kilowatt alternator with an exciter constructed by the Electric Construction Company, Limited, of Wolverhampton, and four 300 horse-power double-draught gas producers made by the Dowson and Mason Gas Plant Company, Limited, of Levenshulme, Manchester.

The contractors for the whole scheme are Hubert Davies and Co., Limited, of South Africa and London, who are also supplying all the apparatus necessary for changing from 220/440 direct-current to 2,000 volts three-phase 50-cycles, including converters and other equipment, to the specifications of the consulting engineers to the Municipality of Salisbury, Messrs. Clifford Jones and Searle, of Johannesburg, and with the collaboration of Mr. C. H. V. Baskerville, the resident electrical engineer.

The tests, carried out at Messrs. Browett-Lindley's works, at Patricroft, were supervised for Hubert Davies and Co., Limited, by Mr. W. A. Tookey, M.I.Mech.E., of Westminster, in the presence of Mr. C. H. Baskerville, who went over from South Africa specially for the purpose. The series of trials was of an exhaustive nature, and particulars are given later.

The Salisbury Power Station.

The original plant was installed in 1914 and consisted of two 100-kilowatt direct-current generators driven direct by Mirrlees, Bickerton and Day Diesel engines of the "Admiralty" type, running at 400 revolutions per minute. These engines ran with the utmost reliability, but, owing to the difficulty of obtaining fuel oil during 1914 to 1918, they had perforce to be closed down in order that a local fuel readily obtainable at lower costs could be utilised. In February, 1919, therefore, a 200-kilowatt reciprocating steam set was installed by Hubert Davies and Co., Limited. It consisted of a second-hand Bellis engine of 400 indicated horse-power coupled to a 200-kilowatt direct-current generator made by the Electric Construction Company, supplying current at 220/440 volts. Included in the plant was a Wheeler condenser, a Woodeson boiler, a Weir feed pump, etc. The working steam pressure was 160 lbs.—no superheat. This steam set was intended to serve temporarily until conditions became more settled, but a review of the position in 1920/1921 revealed the fact that it would be impracticable to revert to the use of the Diesel engines owing to the cost of fuel—then averaging £14 10s. per ton at Salisbury. Following a report to the Municipal Council by the resident engineer, Mr. C. H. Baskerville, Mr. Clifford Jones was consulted, and eventually plans and specifications were prepared for gas-driven alternators to operate with coal from the Rhodesian collieries at Wankie. This decision was the outcome of careful consideration and personal inspection of gas engines and gas plants working throughout the Colony, and in particular at Rooiberg and Leeuwpoort, at both of which places gas plants of the double-draught type were giving satisfactory service with local bituminous coal. The change from direct-current to alternating-current generation was decided upon as being a wise step in the development of the prospective load upon the station from outlying districts, and the converters forming a part of the present contract are intended to deal with existing consumers.

Gas-Producing Plant.

Peculiar interest attaches to the design of the generator, as certain improvements have been made as the result of experience of a number of years with Dowson gas plants operating on the double-draught principle. Probably the most striking feature is the inverted U channel which forms the gas "take-off" at mid-height. This channel is made of refractory material as used in gas retorts, and insures the complete destruction of the tarry vapours in the gas passing downwards, as the whole of this gas has to pass through the gasification zone of the producer before mixing with the producer gas formed in the lower fuel bed.

In the earlier designs the gas take-off was in the form of a gallery around the outer diameter of the internal fire-brick lining, through ports placed at intervals circumferentially, but these passages had a tendency in course of time to block up with clinker, coke and fine soot. The present U retort forms a natural mixing chamber for the vaporous and fixed gases within the cavity formed by the natural angle of repose of the fuel which descends without hindrance to the base of the fire, being assisted by hand poking at intervals from the top plate to clear the sides where clinker is most likely to form.

The generator has an open top—although provided with a sliding cover for use when closing down if so desired—so that the fuel can be fed at any time and the condition of the fire be observed. The sinking of the fuel due to operation tends to disclose the tapered walls at the top of the generator, and the attendant can, therefore, throw the fresh fuel around the sides and pack it against the brick work, allowing the central portion of the fuel to be at a slightly lower level—in fact, to form a more or less concave upper surface to the top of the fuel bed. The fuel [illegible] is supported on a fire-grate within a closed bottom, and the casing is provided with poking holes [illegible] clinker [illegible] so that the whole of the base of the [illegible] may be removed. The [illegible] fire-bars are alternately [illegible] which, by [illegible] the [illegible] under [illegible].

Steam is generated in the upper portion of the vaporiser [illegible] which is in the form of a tubular boiler. The steam [illegible] drawn [illegible] the grate and the humidified air penetrates through the lower portion of the generator. The regulator [illegible] decides the amount of air entering the upper and lower zones as may be necessary to suit the particular class of fuel in use. The blower draws the gas through the system, and the regulating valve [illegible] by the gas holder, permits a greater or lesser amount of gas to be by-passed from the delivery to the suction side of the blower according to the demand of the engine. The gas is led from the top of the evaporator to the base of the scrubber, passing through a water seal before rising through sets of wooden grids from which water is falling. The grids are in tandem tiers, so that while the bottom grids are flushed with water from two sprinklers, the upper grids give the gas a second washing with the upper sprinkler only. This treatment effectually washes out most of the finely divided particles of soot carried along with the gas, being the product of the condensation of the [illegible] vapours as before described. In the second tower the gas passes through a deep bed of coke flushed with water, thus further cooling and washing the gas, which next passes through the interstices of the wood wool packing in the "dry" scrubber.

The satisfactory results achieved during the long continued output and reliability trials at Patricroft will be mentioned later. A photograph of the apparatus as erected for the trial shows that two generators, with accessory scrubbers, etc., were set up on temporary foundations, thus forming one-half of the entire gas plant as it will be when re-erected at Salisbury. The governing gas-holder was not erected and, in consequence, the by-pass connected with the blower had to be hand controlled according to the loads during the Patricroft trials, thus imposing unusual difficulties when varying loads were being carried.

Gas Engines.

The two Browett-Lindley two-cylinder vertical engines are of the robust and simple construction. The cylinders were designed of such dimensions as to leave no doubt that the engines would each develop 300 kilowatts at the altitude of about 5,000 feet above sea-level, and deal comfortably with 15 per cent. overload—345 kilowatts—for at least two hours under Salisbury conditions. At the same time it was necessary, to accord with the requirements of the contract specification, to guarantee under penalty an average consumption of 1.875 lb. of Wankie coal per kilowatt generated under either full load or overload. It will be seen, therefore, that while consideration of output under Salisbury conditions postulated ample cylinder dimensions to insure the specified overload, yet the possibility of the imposition of the penalty for fuel consumption operated to restrict the "margin" at least to meeting the lessening of power per unit of cylinder dimensions desirable to meet the differences of altitude, temperature and humidity between Manchester and Salisbury.

In point of fact, Browett-Lindley and Co., Limited, desired to make certain that the engines were amply large and the acceptance trials, supervised by Mr. W. A. [illegible], proved that under conditions as closely approximating to those at Salisbury as circumstances could permit, one set would develop as much as 410 kilowatts, or [illegible] overload, and yet come well within the guaranteed consumption figures.

The general features of construction of the Browett-Lindley vertical gas engines are as follows: The crank-case is entirely enclosed, and apart from the details peculiar to gas engines, the general design will be recognised as embodying the well-known characteristics of the "Browett-Lindley" vertical steam engines. The cam shaft is housed within the frame, and from it the push rods actuating inlet and exhaust valves are operated in such a way that each is equally accessible for valve timing adjustment and spring replacement, etc. The working parts are lubricated by pressure from pumps situated in the crank pit drawing the oil through filters placed in sumps readily accessible while the engine is running. There are two Lodge plugs to each cylinder, with two gear-driven Bosch high tension magnetos with alternative coil and battery. The governing valve is of the piston type with separately adjustable air regulator to suit gases of varying calorific value, and is additional to the usual hand-operated regulating valves on the gas and air inlet connections. The manifold is constructed so that both gas and air are kept separate up to the inlet valve on each cylinder; mixture regulation being solely effected by the main regulating valves and governor valve adjustment as before mentioned. The inlet valve and cage is a unit fitting and is readily accessible for cleaning and replacement. The exhaust valves are water cooled. The cylinder covers are provided with large inspection plates to permit cleaning out of deposit from impure cooling water, and the covers themselves are clear from all connections, thus permitting examination of pistons and cylinders, etc., with a minimum expenditure of time and labour.

Each cylinder is provided with three separate cooling water pipes leading into a common tun dish, and all four of the latter are connected to a common return pipe. The water connections to each cylinder are:—(a) From underside of exhaust valve chamber, around cylinder walls and thence through a section of the exhaust manifold to the tun dish; (b) from cylinder cover only, thus avoiding gas and water joints between cylinder and cover; (c) air vent cock from top of inspection plate on cylinder cover, this being the uppermost position on the engine.

The fly-wheel is bolted to a flange forged on the crank-shaft, and to the latter the rotary field of the alternator is directly bolted, the whole giving a fly-wheel effect estimated to give a speed fluctuation coefficient of 1/250, while for paralleling purposes the governor is fitted with hand-operated speed variation gear and dashpots.

Alternator.

The alternator and direct-coupled exciter are of the rotating field type of the Electric Construction Company, of Wolverhampton, with 15 pairs of poles giving 50 periods at 200 revolutions per minute three-phase 2,000 volts. The type following standard practice in Rhodesian mines and South African collieries generally, a ready supply of suitable motors and accessories from electrical stocks held in Johannesburg and elsewhere is possible. The machines have been specially built to give an output of 300 kilowatts with ·8 power factor, 375 kilovolt-amperes 2,000 volts, with a temperature rise not exceeding 60 deg. Fah. after six hours' full load on site. They are liberally rated as they have to work at an altitude of 4,800 feet above sea-level.

The exciter is of the E. C. C. well-known standard "SCP" type and needs no description. The test results of the alternators at Wolverhampton, after construction, gave an efficiency of 92 per cent. at full load, 90·75 per cent. at three-quarter load, 88·6 per cent. at half load ·8 power factor. The machines were fully tested at full load, and the temperature in no part exceeded 41 deg. Fah.

SELECTED NEW PATENTS.

694. J. P. P. Riordan and W. Murray, both c/o Box 3146, Johannesburg.—Improvements in tools for securing clamping devices round hose or other flexible pipes for fixing the same to connection and the like and for similar purposes. P. 20/7/23.

695. Frank Hewitt and John Watt, both of Box 54, Springs.—Spring grip. P. 20/7/23.

INDUSTRIES SECTION.

What the Board of Industries is Doing.

SIR HOWARD GORGES DISCUSSES PROSPECTS AND PROBLEMS—RECONCILING THE MANUFACTURER AND MERCHANT—ADJUSTING THE TARIFF—INVESTIGATING THE LEATHER, COTTON, TOBACCO, WOOL AND BACON INDUSTRIES.

It is now a little over two years since the Board of Trade and Industries was established, and in view of the fact that the Board is now making another tour of the industrial centres of the Union, some review of its work and aims may not be out of place. As originally constituted, the objects of the Board were set out as follows: "To hear and examine complaints or recommendations which may be made as to the working of the Customs and Excise tariffs; to advise the Government in regard to such action as may be necessary or advisable for assisting the maintenance or development of industries established or likely to be established in the Union, and the recasting of the Customs and Excise tariffs and the adjustment of anomalies which may from time to time be shown to occur in these tariffs, as may appear to be necessary; and generally to advise on such other matters as the Government may refer to the Board for its consideration and advice."

Wide Scope.

How wide is the scope of the Board's operations may be seen from the statement setting out in detail the subjects which it is expected to examine and report upon. These include: The cost of raw materials in the Union and elsewhere and the cost of the transportation from the place of production to the place of use or consumption; the cost of production of the finished article as compared with the price ruling elsewhere; the cost, efficiency and conditions of labour in the Union or elsewhere; the price received by the producers, manufacturers, wholesale dealers, distributors and retailers in the Union or elsewhere; the tariff, fiscal and other conditions and factors which affect and enter into the cost of production and the price to the consumer; the effect of trusts and combines or other organisations producing or dealing with raw materials or manufactured goods; generally, all conditions affecting production, manufacture, cost and price in the Union as compared with other countries; the development of markets in the Union and neighbouring territories and overseas for the raw materials and manufactured products of the Union; and in any case, the effect which any action recommended would have upon the interests of the consumer in the Union."

Ambitious Programme.

It will be seen that the Board has a very ambitious programme and almost unlimited opportunities for assisting the industrial enterprises of the country in their early struggles, and the experience of the past two years has abundantly justified its appointment. It is an itinerant body, and in its travels from end to end of the country comes into more immediate touch with industrial interests, and its investigations assume more of a personal character than is possible with a department that remains in the official seclusion of its office and waits for inquirers to come to it. During its two years' existence the Board has proved of the greatest value as a medium between the manufacturer or producer and the Government, and its recommendations, based on last year's tour, mainly in regard to revision of the tariff, have been greatly appreciated by the manufacturers concerned.

Sir Howard Gorges, the chairman of the Board, interviewed by a representative of the "S.A. Mining and Engineering Journal," at Pretoria this week, expressed his complete satisfaction with the progress industrial development is making, despite the temporary setback indicated by the latest industrial census figures just issued, which show a slight falling off in the number of factories and of employees, while the gross value of manufactures has dropped from 98 million pounds to 79 millions, though doubtless this reduction largely reflects only the slump in prices rather than any permanently reduced activity. The leather industries of Port Elizabeth were found to be particularly flourishing, stimulated as they have been by the recent revision of the tariff which provides a protection of 27 per cent. over imports."

Better Tobacco Wanted.

Before reaching Port Elizabeth the Board travelled to the Great Brak River district, George, and Oudtshoorn, where special attention was given to various aspects of the tobacco growing industry, and these were further investigated later in the present week at Rustenburg. As was pointed out in our columns four or five weeks ago, the greatest handicap the industry has hitherto experienced is the growth, especially in the Transvaal, of a huge quantity of low grade tobacco, which no reputable manufacturer will use for standard brands of smoking mixture or cigarettes. Much of this inferior weed does, however, find its way to some of the smaller manufacturers and when on the market

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only South African tobacco be [illegible] at the [illegible] of the leaf. Some of the firms who are jealous for the maintenance of the country's reputation in this respect have made representations to the Government in regard to this matter, and it is understood that as a result arrangements are being made, through the co-operation of the Government and the manufacturers, a large quantity of this inferior tobacco will be bought up and used only in the manufacture of sheep-dip. "For ten years," said Sir Howard Gorges, "the Department of Industries and of Agriculture have been preaching to the farmers the need for improving the quality of the tobacco they grow, but so far with little effect. If the farmers would only realise it, there is [illegible] 6d. per lb. difference in the price the superior leaf will fetch."

After spending some time with the boot and shoe manufacturers at Port Elizabeth the Board journeyed by way of King Williamstown to East London, and here again were greatly encouraged by the spirit of enterprise and progress in industrial development manifested. In the early part of the present week a number of manufacturers in the Pretoria district were interviewed; on Wednesday Sir Howard Gorges and his colleagues journeyed to Rustenburg, and then came on to Johannesburg, and on Thursday afternoon met the members of the Transvaal Chamber of Industries and discussed many matters of interest to the manufacturers.

Later the Board proposes to visit Mr. Schlesinger's extensive citrus estates at Zebediela. They then proceed to Durban, Maritzburg and Estcourt, where the bacon-curers want to discuss the cost of the "raw material" and selling prices in view of the keen competition overseas producers have lately put up. After a call at Harrismith to see how the new National Wool Industries factory—recently described in these columns—is progressing, the Board will conclude its present tour at Bloemfontein and Kimberley.

An Encouraging Outlook.

Asked his impressions of the present position and prospects of industry, Sir Howard Gorges said the most marked improvement was in the boot and shoe trade, as a result of the legislation of last session. Generally speaking, he finds much promise of ultimate success, though, he added, "everybody is just now complaining of the hard times. Until the European situation clears up it does not seem that there is likely to be very much improvement. But on the whole the Board considers that steady progress is being made all along the line."

"The task of building up industries, however," added Sir Howard, "is one of considerable magnitude and cannot be rushed. Careful consideration must be given to all the interests concerned. We very often find, for instance, that where we have given a certain measure of protection to one industry, it is at the same time imposing some disability or handicap on another, and we have to devote much careful consideration to reconciling conflicting interests. We have to try and steer a middle course and sometimes this is a matter of extreme difficulty."

Are S.A. Products Inferior?

This naturally brought to mind the alleged antagonism between the manufacturers and the merchants and other importing interests, and the interviewer asked if there was any real ground for the complaint sometimes made by the merchants and retailers that they could not profitably push the sale of South African manufactures because of their inferior quality and poor workmanship.

"There formerly certainly was some ground for such complaint," admitted Sir Howard. "But on the whole," he went on, "the industrialist to-day is very much more careful about the quality of his product, and it is now, I think, thoroughly realised by everybody who has sunk capital in South African industrial enterprises that the only way to sell goods is to maintain the quality. As to the relations between the manufacturers and the merchants, there has been quite a marked improvement of late between the two sections, and I think the signs are very hopeful that the two interests will fall into line and arrive at an understanding satisfactory to both.

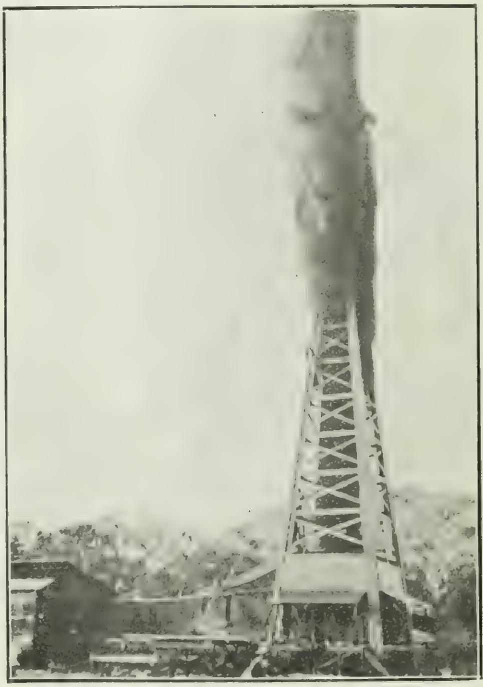
Last session Parliament extended the scope and responsibilities of the Board by giving it statutory powers in respect to allegations of restraint of trade in the creation or growth of monopolies or trusts. The Board is now empowered to hold enquiries into such allegations, though it has no power to suppress such abuses, but merely to report to Parliament. The Board is just beginning to deal with this new aspect of its duties, and so far no definite action has been taken in any case.

Tariffs and Transport.

In regard to its more routine duties, Sir Howard is quite satisfied with the progress made. "All the industrialists in the country," he said, "now know of our existence, and know that all questions of Customs and Excise tariffs may be referred to us for investigation. The industries are now well organised and are able to make collective representations to us through their Executives, with whom we are in constant touch. When we have a matter referred to us we try if possible to pay a personal visit to the factories concerned, see what they are doing, and what the possibilities are, and then hear the representations of importers or others who will be affected by the alteration of the tariff in question."

Transport facilities and costs also provide the Board with a good deal of inquiry work, and in this connection the fact that a prominent official in the Rates Department of the Railway Administration is a member of the Industries Board is an invaluable assistance in its deliberations and its recommendations—because it has no power to do more than direct attention to apparent anomalies or hardships in the railway rates. There is no doubt, however, that coming from a body with the authority attaching to this Board, its recommendations receive the most sympathetic consideration possible.

A GREAT OIL GUSHER.



Chapopote Nuñez, Mexico, No. 2, Drilled in June 9, 1922.

SHIPS AND SHIPPING.

MYSTERY OF GERMAN BUILDING ACTIVITY—RUHR REACTION IN HOLLAND.

(From a Special Correspondent.)

London, July 20.

An analysis of the figures set forth in Lloyd's Register Shipbuilding Returns for the quarter ended June 30th, reveals at least one curious fact. It is this: That, in spite of strikes, political and economic chaos and a currency debased almost beyond recognition as such, Germany has far and away the greatest amount of tonnage under construction. As that well-known maritime authority, Mr. Archibald Hurd, rightly observes, "the whole business is rather mysterious for the Germans plead that they are practically bankrupt." In the year 1921 upwards of half a million tons of shipping were launched in Germany, and last year the output was ever higher—575,000 tons. During the past six months the launchings have reached an aggregate of nearly 190,000 tons, and it is stated that seventy-two ships of 301,199 tons are still under construction. So that, in face of all the obstacles of which so much is heard, the Germans are not doing badly, and as the new vessels leave the shipyards they are being put in commission, placed on the most profitable trade routes, and there make satisfactory dividends, for the freights are earned in currencies which stand relatively high, while wages and a good many other expenses are paid in the depreciated mark.

The returns for the last quarter as a whole show a decrease of about 154,000 compared with those for the previous quarter, in the tonnage under construction in Great Britain and Ireland. The tonnage being built at the end of June was 1,337,759 tons, these figures being less than those for twelve months ago by 582,000 tons. The total for June 30 last included 130,000 tons on which work had been suspended for some time. Deducting this amount in order to enable comparison to be made with figures for normal times, the tonnage actually under construction in Great Britain and Ireland now amounts to 1,208,000 tons. The average tonnage under construction during the twelve months immediately preceding the war was 1,890,000 tons, 682,000 tons more than the present figures. As compared with the figures for the quarter ended March 31 last there has been a slight increase in the tonnage launched, but a considerable decrease in the tonnage on which work has been started in Great Britain and Ireland during the past quarter. The tonnage on which work was started represented only 16 per cent. of the work in hand at the beginning of the quarter. The total merchant tonnage under construction in other countries is 1,206,097 tons, but this includes about 132,000 tons on which work has been suspended, leaving about 1,074,000 tons actually under construction. The latter figure is less by 146,000 tons than that at the end of March, 1923. The figures for the leading countries abroad are:—Germany and Danzig, 352,405 tons; France, 170,860 tons; Italy, 141,453 tons; United States, 133,660 tons; and Holland, 99,821 tons.

World's Tonnage Comparisons.

There has been a remarkable recovery and growth in the shipping tonnage of the world since the outbreak of war in 1914. According to statistics compiled by Lloyds the maritime nations of the world now own 57,939,000 tons, compared with 42,514,000 in 1914. Excluding Germany which is still short of her pre-war tonnage, Greece is the only country which still shows a reduction in the tonnage now owned as compared with 1914. The sea-going tonnage of the United States has increased by over 10½ million tons. The other countries in which the largest increases are recorded are: Japan, 1,760,000 tons; Italy, 1,360,000 tons; France, 1,347,000 tons; and Holland, 1,135,000 tons. Taken together, the Scandinavian countries—Norway, Sweden and Denmark—show an increase as compared with 1914 of 628,000 tons. In 1914 the United Kingdom owned nearly 44½ per cent. of the world's sea-going [illegible] steam tonnage, the present percentage is just under 33. The United States occupy the second place, with 12,416,000 tons, equal to 21·4 per cent.

The following table gives detailed particulars:—

Country	June, 1914 Tons gross	July, 1923 Tons gross
Great Britain and Ireland	18,877,000	19,077,000
British Dominions	1,407,000	2,219,000
America (United States)	1,837,000	12,416,000
Austria Hungary	1,052,000	Nil.
Belgium	341,000	600,000
Denmark	768,000	920,000
France	1,918,000	3,265,000
Germany	5,098,000	2,496,000
Greece	820,000	743,000
Holland	1,471,000	2,606,000
Italy	1,428,000	2,788,000
Japan	1,642,000	3,402,000
Norway	1,923,000	2,299,000
Spain	883,000	1,169,000
Sweden	992,000	1,092,000
Other Countries	2,057,000	2,847,000
Total Abroad	23,637,000	38,862,000
World's Total	42,514,000	57,939,000

Holland's Merchant Fleet: Depressing Effects of German Stagnation.

The uncertainty of the general situation in Germany closely affects the shipping of the Netherlands and also the prosperity of the ports of Amsterdam and Rotterdam.

The decreased buying power of the hinterland has given the Dutch carrying trade a particularly hard blow. Further, the high costs charged in Dutch ports and the comparatively high rates charged for transit by land or water, owing to the high rate of the florin, diverted much of the traffic to German ports direct, and although several Dutch lines have regularly made a practice of calling at either of the two principal German North Sea ports, competition with native tonnage is practically impossible. However, towards the end of the year the demand for tonnage improved and regular lines were able to reduce the number of their vessels lying up, which at one time amounted to 100 with a gross registered tonnage of 353,000.

The entrances into the harbours of Amsterdam and Rotterdam have gradually increased since the war, the figures for last year being: Amsterdam, 2,868 vessels of 4,161,067 tons net; Rotterdam, 8,462 vessels, of 12,338,016 tons. The Dutch merchant fleet was increased during the year by 73 new steamers and two motor schooners, with a total gross tonnage of 331,231, while there were purchased abroad 12 steamers and one motor schooner of 71,382 tons gross.

On the other hand, the Dutch fleet lost 78 steamers and seven motor vessels, of 208,770 gross registered tons, of which 76 steamers and six motor schooners, with 204,192 gross registered tons were sold, and two steamers and one motor schooner with 4,578 gross registered tons were lost.

The whole Netherlands merchant fleet in December, 1922, numbered 695 steamers and motor vessels, and 28 motor schooners, totalling 2,427,868 tons gross, against 688 steamers and motor vessels and 32 motor schooners, of 2,230,268 tons gross, in 1921. The tonnage launched in 1922 amounted to 163,132 tons or 69,000 tons less than in 1921, while the tonnage on the stocks amounted to 142,996 tons in December, 1922.

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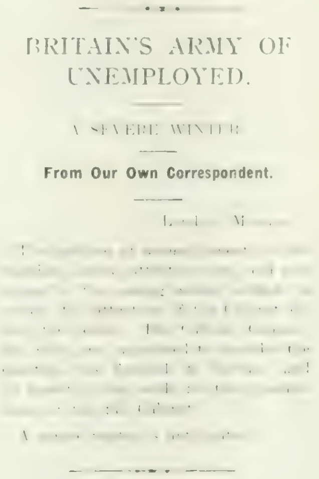

BRITAIN'S ARMY OF UNEMPLOYED.

A SEVERE WINTER

From Our Own Correspondent.

GOODS MANUFACTURED IN GREAT BRITAIN

ADV. E.E.1 ·8

TRADE SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS STILL QUIET, WAITING ON EUROPEAN DECISIONS—IRON AND STEEL WIRE NETTING IN SOUTH AFRICA—BRITISH TRADE IN OCCUPIED GERMANY—GERMAN REPARATIONS DUTY AND INDUSTRIAL CONDITIONS—TIMBER AND BUILDING MATERIALS—TENDERS.

General.

Business during the past week, interrupted as it was by a public holiday, was confined within narrow limits. Very little activity was shown on the Commercial Exchange, and generally merchants state that the month has opened not too auspiciously. The mines are rigidly adhering to their policy of not buying beyond their absolutely requisite requirements, nor, in face of existing European politics, can they be blamed therefor, or any other procedure be reasonably expected. But, although at the moment very little business is being done on the Rand, reports from various parts of the Union are still inclined to be optimistic as to our future, and perhaps not far distant future. Business is certainly a little better even in the inland towns, owing to the stimulus given to the farming community by harvesting operations, and merchants report slightly better conditions due to inquiries from farmers for fencing material and for agricultural implements—more so indeed than for some considerable time. Indications all point to the fact that the farmers are turning over their produce and getting in a little ready money.

A very satisfactory point to note is the fact that the Union's railways are now doing very much better than for a long while. According to Sir William Hoy's latest bulletin, the Railway Administration are now, and have recently been, showing earnings of nearly £30,000 per week above the estimate, which, remembering the huge deficits of the past, can only be said to be extremely satisfactory. The General Manager states further that railway material can now be obtained in England at prices very much below those ruling in recent years, which all tends to decrease running expenses and increase profits in the future. It is much hoped by the community that the improvement already shown in the Railway Administration's finances will continue later on in the shape of much-needed freight reductions.

The great drag on the commercial world to-day, as it has been for long, is the wretched oversea political situation, which one must admit is at the moment as far from solution as ever. It is impossible to see a glimmer of light in the dark clouds which envelop the position. The responsibility of ending such an impasse seems to rest upon Great Britain, and it is sincerely to be hoped that she will devise some means of bringing about this much-desired result, as this is a question which is crippling every commercial venture both at home and abroad, and, said one of our foremost commercial men this week, until this grave difficulty is amicably settled that great factor in commercial pursuits—money—is not going to be forthcoming. When that trouble is once and for all settled, he felt that the great uplift which has so long and anxiously been awaited by us will certainly come about, and, as previously stated, there is no country in the world to-day that will benefit more than South Africa. This country, he said, is in a better state to-day in every department for that forward movement than it has ever been in her past history.

Engineering shops locally are beginning to feel just a little better tone in the way of getting orders—some of them are fairly busy. A satisfactory amount of tendering is going on for their work, which, no doubt, will come in in due course.

Things are still fairly busy in the building trade, and the outlook is quite encouraging for the future. Before very long we shall have some very fine supplies of fresh timber for all requirements.

On the whole, this shrewd commercialist thought the night might prove to be the darkest hour before the dawn. France, with her hundreds [illegible], was undoubtedly a standing menace to a settlement of the European position, but if Britain did not eventually surmount these obstacles, he was quite sure no other power in the world could do so.

German marks are at the moment of writing some 8,000,000 to the £ (the writer remembers, as, of course, do others, twenty years ago—as a matter of fact, up to July, 1914 and after—20 marks 40 pff. (about) as the equivalent. Of course, any further fall in the mark (which appears to be more than probable) cannot well further depreciate the value of it as currency. The community recognises that the world is on the eve of tremendous issues, and awaits with anxiety the upshot of pending decisions.

Iron and Steel.

Business conditions during the week have been of a quiet character. The Commercial Exchange has exhibited little strength, and generally merchants are awaiting the result of decisions presently pending in Europe. Quotations remain unchanged from last week.

Iron and Steel: Mail Advices: Britain: The Outlook.

The position of the iron and steel industry in Great Britain is becoming one of great difficulty. The cautious attitude which has been pursued by consumers for many weeks past in not buying more than their immediate requirements necessitated is now having its full effect upon the position of the makers, who are badly off for orders. In a number of cases works have been closed down until sufficient orders accumulate to enable them to start a rolling programme. The result of these conditions is seen in the keener competition to secure such business as is passing. Export prices in particular have been sharply cut where firm orders were in question. The Continental position continues uncertain, and while on the whole Belgian works are firm in their ideas of price, some at least of them are still anxious to obtain orders. The fluctuation of the franc exchange, however, has hindered business in this direction, and the French works are also understood to be in difficulties regarding fuel supplies.

At the weekly meeting of the London Iron and Steel Exchange quiet conditions ruled. The general impression was that the uncertain political outlook was seriously affecting trade, and that little improvement could be looked for until conditions on the Continent changed for the better.

Pig Iron.

No. 3 Midland iron is reported as [illegible] at £5 7s. 6d. delivered, works.

Semi-Finished Material.

Continental prices have stiffened somewhat, and the general quotation is now about £6 10s. for 2 in. billets and £6 7s. 6d. for blooms and [illegible]

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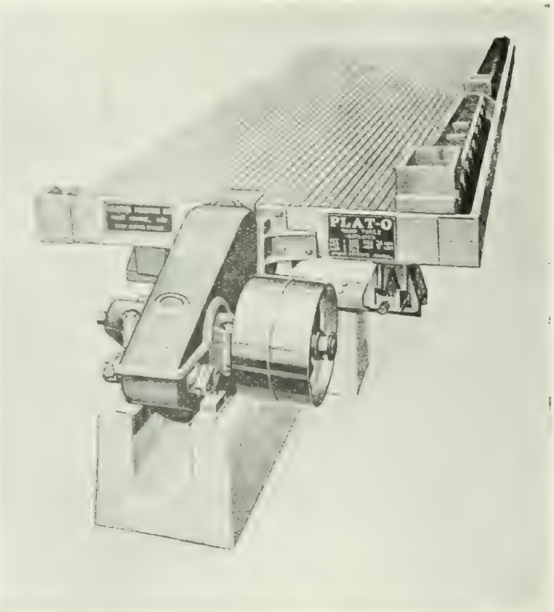

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at about £8 5s. delivered Midlands. The prices of French wire rods have also increased to about £10. Belgian works have quoted rods in coils as low as £9 5s.

Finished Material.

The demand is quiet. Continental quotation for steel bars is £7 10s. to £8 f.o.b. The Saar Valley works have quoted £8 10s. for ship plates to Lloyds' test, while the German works outside the occupied area have quoted £7 15s. Belgian manufacturers have quoted cut rods at £8 15s. basis, six to eight weeks' delivery, and [illegible] at £7 6s. f.o.b.; angles at £7 9s.; and tees at £7 15s. British quotations for export have been somewhat steadier; angles have been quoted at £9 to £9 7s. 6d.; channels at £9 5s. to £9 7s. 6d.; and 45 lb. rails at £10, [illegible]. Hoops in coils have been quoted down to £11.

Iron and Steel Production.

The National Federation of Iron and Steel Manufacturers, in the "Statistical Bulletin" for May, states that an increase in the output of pig iron and steel took place in that month compared with the previous month. There was also an increase of seven in the number of furnaces blowing, the total working at the end of May being 223.

The production of pig iron in May amounted to 714,200 tons, the larger part of which was hematite, the output of which totalled 252,100 tons. The quantity of basic produced was 217,900 tons; of foundry, 115,800 tons; and of forge, 44,100 tons.

The total output of steel in May was 821,000 tons, of which 485,200 tons were from basic open hearth furnaces, and 273,000 tons from acid open hearth furnaces. 38,500 tons of acid steel was produced from the Bessemer converter, and 15,200 tons of basic steel.

The figures for the production of finished steel in April show that the output of sections, girders, joists, rounds, squares and flats amounted to 143,900 tons. The production of plates ⅛ in. thick and over was 84,300 tons, whilst the output of galvanised sheets amounted to 50,900 tons, and of tin, terne and black plates, 61,900 tons. The output of hoops and strips was 34,000 tons, and of rails, 50 lb. and over, 34,600 tons.

The total wrought iron production was 104,900 tons, which included a forge production amounting to 60,000 tons, made up of 31,200 tons of puddled bars and 28,800 tons of scrap bars and a finished mill production of 44,900 tons. The latter included an output of bars, rods, rounds, squares, flats, etc., which reached 37,800 tons. The production of rolled tube hoops and strips was 4,200 tons. Sheared strip accounted for 1,200 tons, and sheets under ⅛ in. thick 1,000 tons.

Since the stoppage of the steel industry caused by the coal strike it is interesting to note that the larger and more economically worked furnaces have been blown in first, and that the average output per furnace for the month of September, 1920, was 2,470 tons, while in May, 1923, the average output amounted to 3,203 tons, being a daily rate of 82 tons and 103 tons respectively.

Quctations: Pig Iron.

Cleveland No. 1, 120s.; No. 3, 110s.; No. 4 forge, 104s.; mottled, 97s. 6d.; hematite mixed Nos., 110s.

Finished Iron and Steel.

Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft, £9 10s.; hard, £10 5s.; bars and angles, £9 10s.; tees, £10 10s.; joists and channels, £9 15s.; sheets, singles, £13 10s.; doubles, £14; trebles, £14 15s.; plates, ship, £10; boiler, £14; rails, £10

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots, fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7 ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 18s. to 19s. 6d. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 19s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 22s. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 20s. 6d. per cwt.; bolts and nuts, 50 per cent. discount.

Metals.

Home prices are as follows: Copper ingots, £98 per ton; wrought brass, 9¾d.—10d.; brass sheets, 8 lb. and heavier, to 10 gauge, 10⅝d.; 10 to 16 gauge, 10⅞d.; 16 to 24 gauge, 11d.; copper sheets, 10¼d.; brass wire, basis size and quality, 10⅛d.; 10 to 12 gauge, 10⅜d.; 12 to 14 gauge, 10⅝d.; 14 to 16 gauge, 10⅞d.; 16 to 18 gauge, 11d.; 18 to 19 gauge, 11⅛d.; 19 to 20 gauge, 11¼d.; copper wire, to 10 gauge, 11d.; 10 to 12 gauge, 11⅛d.; 12 to 14 gauge, 11¼d.; 14 to 16 gauge, 11⅜d.; 16 to 18 gauge, 11⅝d.; 18 to 19 gauge, 12⅛d.; 19 to 20 gauge, 12¼d.; copper tacks, 10¾d.; copper rivets, 18½d.; copper washers and burrs, 27½d., all per lb.

Nails.

On June 27 the prices of patent steel nails, steel cut nails and steel cut tramplate nails were reduced 20s. per ton. Steel forged lines remain unchanged. The following are the current prices: Patent steel roseheads, 5 in. to 7 in. [illegible], 25s. 9d. per cwt.; cut steel clasp, 3 in. to 6 in. basis, 19s. per cwt.; cut steel plate, 2½ in., 19s. 6d. per cwt.; steel [illegible], 1 in. by ⅛ in., 20s. 6d. per cwt.

Big Plate-Rolling Plant Contract.

The Consett Iron Co., Ltd., Durham, have placed a contract for plate-rolling plant with Davy Bros., Ltd., Sheffield. It comprises a 40 in. electrically driven "Davy" slabbing mill with universal manipulator; a 44 in. by 12 in. steam hydraulic shears; a 32 in. by 6 ft. 6 in. electrically driven "Davy" three-high light plate mill with tilting tables; a 42 in. by 9 ft. 6 in. "Davy" electrically driven [illegible] reversing heavy plate mill; and the whole of the handling equipment for the plate finishing department. It is estimated that the work will employ a thousand hands for a period of twelve months.

Barrow Furnace Damped Down.

Owing to the falling-off in the demand for iron, the Barrow Steel Co. on July 3 put out of blast a furnace on the ironworks side of the establishment, leaving only two blowing. The output has been decreased at other works in the district, and there is also less activity in the iron mines. Barrow steel mills remain fairly well employed.

Wire Netting in South Africa.

The following article appearing in the "Ironmonger" on such a [illegible] will doubtless be of interest to our readers, and especially to South African wire netting manufacturers. Several firms manufacturing wire netting in the Union of South Africa recently petitioned the South African Board of Trade and Industry to protect them from British competition by the imposition of an import duty. The grounds of the petition were that British manufacturers were "dumping" wire netting in South Africa by selling to the [illegible] here at a discount of 70 to 75 per cent. off the list price, plus the usual extras, which sometimes amounted to an additional 5 per cent. and 2½ per cent. This, it was alleged, was a much lower price than that at which similar material was sold in Great Britain. The Board of Trade and Industry referred the matter to the Customs Controller and the Minister of Finance, and these authorities have refused to take action on the ground that if buyers in the United Kingdom were prepared to buy wire netting in quantities as large as those usually ordered by South African firms, the British makers would sell it to them at the same rate.

The attention of the South African authorities appear [illegible] that, as the South African importing houses usually order wire netting in the bulk, and the South African [illegible] firms in similar quantities, the British manufacturers were able to sell at a much lower rate to South African importers than they would to British retailers. The argument is familiar to the wire netting trade of Britain; but the fact remains that while consignments of wire netting sent to South Africa by the British makers are very large, the same makers do often send out smaller [illegible]. Probably the South African netting manufacturers [illegible] the discounts granted by British houses. Immediately prior to the [illegible] the ruling British [illegible] for [illegible] netting for export to South Africa was [illegible], and German manufacturers were quoting similar rates. The Germans had the advantage of a lower freight from Continental ports than our manufacturers had to pay from British ports, but, on the other hand, they had to meet the import duty of 3 per cent. in South Africa, which is adjusted on British-made netting in the form of a rebate. It will be seen, therefore, that the British makers are not in a position to maintain their prices at an unfair level in South Africa when they have to compete with the Germans who are the South African manufacturers' real competitors.

The allegation of "dumping," by which is meant that the makers of British netting [illegible] sell their goods in South Africa at considerably lower prices than they charge to the home consumers, has about as much basis as these charges usually have. Manufacturers in nearly all countries regard their export trade as a natural outlet for the surplus of their products which is left after the home requirements have been filled, and for that reason they often quote lower prices for export than for the home market. The price of wire netting for South Africa is usually in the neighbourhood of 10 per cent. below the home figure, which, all things considered, is not an unreasonable difference.

British Trade in Occupied Germany.

The President of the Board of Trade, in reply to inquiries whether any difficulty was now experienced by British merchants and others in obtaining export licences from the French authorities for goods from the occupied areas of Germany contracted for after February 1; and whether other difficulties placed in the way of the export of these goods had now been removed, replied that German Government decrees forbid firms in Germany to apply for licences to the occupying authorities, and the French and Belgian concessions which permit of applications for licences being made by or on behalf of the purchasing firms in Britain only extend to contracts concluded before February 1. Even if this date were extended, he said, and purchasing firms were permitted by the occupying authorities to apply for licences in respect of goods contracted for subsequently, the German Government decrees would not permit of the delivery to such firms of goods contracted for since February 20, so that the exportation of such goods would in any case be impossible.

German Reparations Duty.

Sir W. Joynson-Hicks (Treasury) stated recently that the amounts collected by the Customs under the provisions of the German Reparation (Recovery) Act are as follows:—

Year ended March 31, 1922	£3,709,000
Year ended March 31, 1923	7,474,000
Two months ended May, 1923	1,397,000
	£12,580,000

The operating rate of the duty was reduced from 50 to 26 per cent. from May 13, 1921.

Dorman, Long & Co.'s Iron and Steel Interests,

Sir Arthur John Dorman, chairman of Dorman, Long & Co., Ltd., who is in his 75th year, has been awarded a baronetcy for public services in Yorkshire. In 1876 he embarked upon a partnership with the late Mr. Albert de Lande Long, establishing the firm that has grown from small beginnings to a concern employing 25,000 workmen and controlling no fewer than 33 blast furnaces. After acquiring from Sir Bernard Samuelson the West Marsh Ironworks, the firm established, took over or purchased a controlling interest in the Newport Iron Works, the Acklam Iron Works, the Redcar Iron and Steel Works, the Kilton Mines, the Clarence Iron and Steel Works, the Carlton Iron Works, the Britannia Steel Works, the North-Eastern Steel Works, Sheet Works and Wire Mills at Middlesbrough, and important steel constructional shops at London, Melbourne and Sydney. In addition, it has a major interest in Wade & Dorman, Ltd., South Africa.

Skoda Works.

The issue has recently been announced of £1,000,000 8 per cent. first mortgage sterling debentures at 92 per cent. The works were established in 1869, and are situated on the outskirts of Pilsen, in Prague, Czecho-Slovakia. They are said to be the second largest steel and engineering works in Europe. The manufactures include steel ingots, castings and forgings up to 100 tons weight, locomotives, gas engines, steam turbines, petrol tractors and agricultural machinery.

German Industrial Conditions.

A Britisher writes from Germany that the seizure of railway lines by the Franco-Belgian authorities is extending more rapidly than is generally realised; and the number of German miners who have succumbed to economic pressure and accepted work under the occupying forces is increasing. Disorganisation of traffic—largely due to German obstruction—has given the German workman the impression that he is being made the victim of a deliberate food blockade; and industrial unrest, originating with the miners, has spread throughout the whole country. There will be no industrial peace in Germany until the principle of automatic adjustment of wages to cost of living is universally accepted. Meanwhile the debt of mining and metallurgical property to the State forms a very large part of the credit of 4,600,000,000 marks extended by the State Bank. This indebtedness, becoming more and more pressing, has resulted in financial negotiations being opened up, by the large industrial enterprises of both the Rhineland and the Ruhr, with foreign capitalists; and developments should be closely watched.

United States: Pig Iron.

The American production of pig iron in June totalled 3,668,443 tons, a slight reduction compared with May. It would appear, therefore, that the production of the blast furnaces is not being pushed to its full extent. Three blast furnaces are reported to have already shut down, and further shut-downs are expected. Prices are again easier in the Chicago district, No. 2 foundry having receded from $30 to $27-$28. No 2 foundry in Western Pennsylvania is quoted at $26·50; Bessemer is nominal at $27, with basic at $25. French pig iron has been offered freely of late at $27·50 c.i.f. Buyers are holding off for lower levels, and buying is not expected to recommence until the $25 level has been reached. Steel.—Operations in the steel trade are rather lighter; prices are nominally unchanged, but privately have shaded somewhat on attractive business.

Railway Material.

The buying of railway material has improved, and in June orders for 141 locomotives were placed, including 11 for export, as well as contracts for 1595 freight cars.

Tube Works Amalgamate.

The Youngstown Sheet and Tube Company has finally completed the purchase of the Steel and Tube Company of America by passing a cheque for $33,000,000. This makes the new amalgamation the second largest independent sheet manufactory and the largest wrought pipe and tube producer.

Belgium.

Several of the bigger steel works are booked up until the end of September, and have withdrawn from the market as they are confident that they will be able to take all the orders they want at much higher prices later on.

Cuba: Demand for Galvanised Sheets.

There exists in Cuba a considerable and consistent demand for steel and iron galvanised sheets. The chief consumers are the sugar mills, which use a considerable quantity in building and in repairing their premises and

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[illegible] the very [illegible] of supply are the United States and Great Britain. The United Kingdom has in the past secured about [illegible] of the business, but this proportion appears to be diminishing. [illegible] the [illegible] part of the [illegible] is in the hands of the United States Steel Products Corporation, which is said, however, to be in a position to execute any orders [illegible] galvanised plates, both corrugated and uncorrugated, [illegible]

Second-hand Machinery.

The market this week for second-hand machinery, excepting for some minor things, has been very dull. A [illegible] the mines producing nothing except when they are compelled to, and [illegible] their [illegible] There appears to be a number of small [illegible] mill [illegible] country industrialists who have purchased [illegible] machinery [illegible] with the [illegible]. Several lots of [illegible] of the smaller kind have been shipped to [illegible] for [illegible] up in Tanganyika and the Belgian Congo have also been purchasing [illegible]. Broken Hill, in the north, has also been placing some [illegible] orders. Otherwise [illegible] on account of the [illegible] of material. The second-hand material dealers are more or less always busy with small [illegible] orders, which keep them going [illegible]. The P.W.D. used to be very good customers for all kinds of second-hand machinery and material, but during the last six months they have bought practically nothing except immediate requirements. Very little plant has been dealt in. To sum up, there is very little animation in the second-hand machinery line and very little doing.

Timber and Building Materials.

The timber business is at present quite [illegible] not coming to hand satisfactorily, and the shortages of some sizes of [illegible] may now be deemed to be over. Corrugated iron has a tendency to go down, but values of other building materials remain firm. Building operations have eased off somewhat during the past week or two, but renewed activity is expected a little later on.

Second-hand Iron and Timber Yards.

There is nothing [illegible] more or less at the moment; the [illegible] of stocks is still [illegible]. Prices are for second-hand iron about 3d. to 6d. and for timber about 6d. to 8d.

Electrical Goods.

Last month [illegible] and August [illegible]. Prices, both at home and locally, are not appreciably affected.

Tenders Recently Recommended by Johannesburg Town Council.

The Brick & Potteries Co., Ltd., 70,000 hard blue building bricks at £4 per 1,000, £280; Robert Hudson & Sons, for 150 tons 60 lb. A grade rails at £17 per ton of 2,000 lb., £2,550, and approximately 500 pairs fish plates and bolts at 7s. 6d. per pair, £187 10s.—£2,737 10s.; Sealer & Franks, Ltd., for 24 200-amp. 6,000 volt high tension single phase oil switches at £18 5s. each, £438; Vickers (S.A.), Ltd., 30 steel tramway tyres at £2 19s. 9d. each, £89 12s. 6d.; Hume Pipe Co., Ltd., 5,134 ft. of 30 in. reinforced concrete piping at 12s. 6d. per foot, £3,208 15s.; the British Agencies, Ltd., 1,200 ¾ in. [illegible] disc water meters at 49s. 6d. each, £2,970; Stewarts & Lloyds (S.A.), Ltd., 100 fire hydrants at £2 1s. 10d. each, £209 3s. 4d.; S. Sykes & Co., Ltd., six 9 in. sluice valves at £7 10s. each, £45; Stewarts & Lloyds (S.A.), Ltd., 10,000 ft. ½ and ¾ in. galvanised piping at 3.5d. and 4.6d. per foot, £280; T. A. Lawrie, for the supply and delivery of steam coal for 12 months, or nut coal at 10s. 10d. and pea coal at 10s. 1d. per ton of 2,000 lb.—estimated value £40,300.

S.A. Reserve Bank.

Ratio of cash reserves to liabilities to public, according to statement issued on August 4, 66·6 per cent.

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It's a **little hoist,** with a **big pull.**

The "Turbinair" weighs but 285 lbs.—43.8 lbs. per h.p.

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No [illegible]. Two levers, a throttle and a brake, permit simple positive control.

The drum holds 500 ft. of 5/16 in. rope.

Use the "Turbinair" for hauling cars, light sinking, hauling [illegible] pulling well casing or diamond drill rods.

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FAR EAST RAND DIVIDEND PAYERS—HYDRO-ELECTRIC SCHEMES IN SOUTH CENTRAL AFRICA—HEAD OFFICE CHARGES—CASE OF THE E.R.P.M.—GOLD MINING IN RHODESIA.

Industries The South African Commerce
Mining & Engineering Journal
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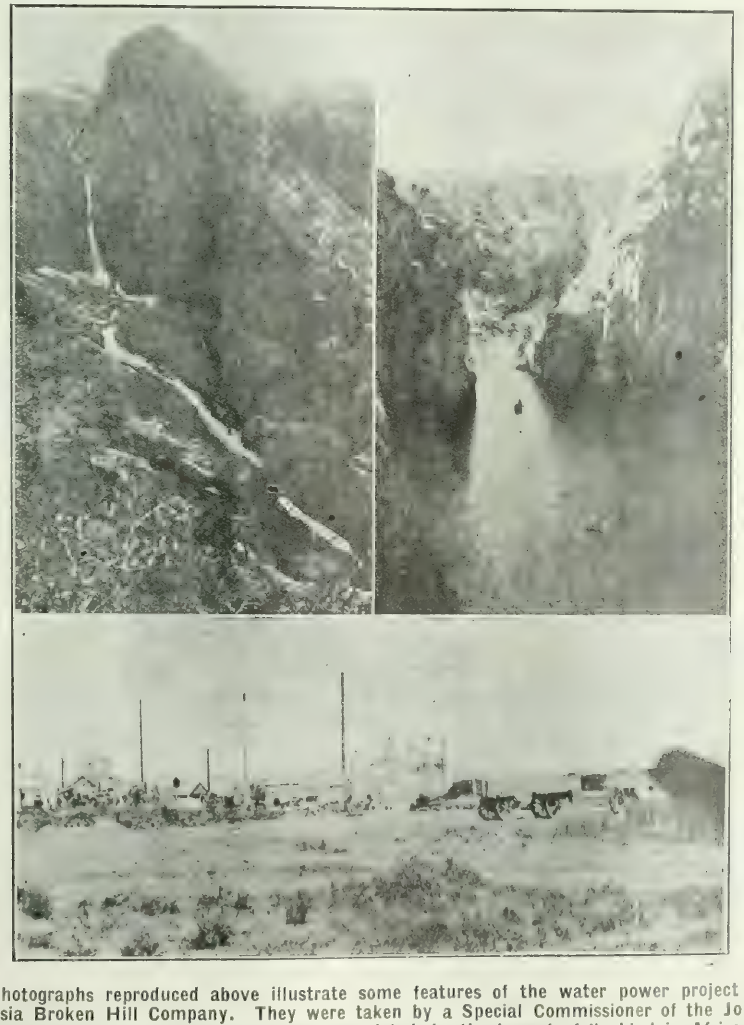
RHODESIA BROKEN HILL'S HYDRO-ELECTRIC SCHEME.



The photographs reproduced above illustrate some features of the water power project of the Rhodesia Broken Hill Company. They were taken by a Special Commissioner of the Journal a week or two ago. The scheme will, when completed, be the largest of its kind in Africa and is dealt with at some length in a special article appearing elsewhere in this issue. Top photos: Left: Mulungushi Falls. Right: Gorge above the power site. Bottom photo: Smelter Plant of the Broken Hill Company.

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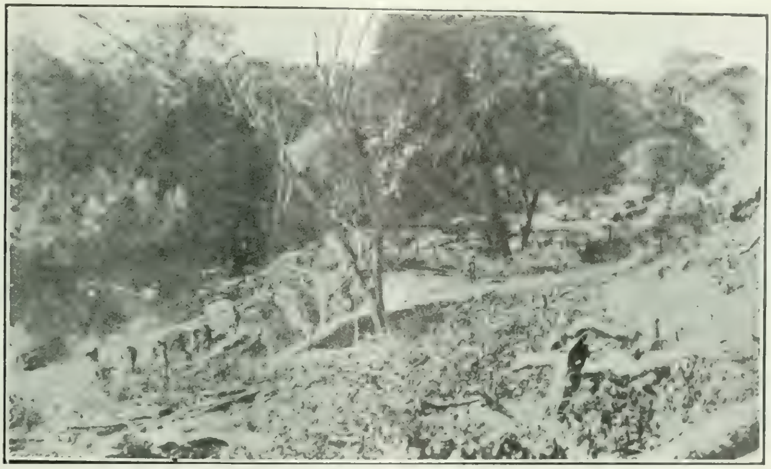
From our Special Correspondent.



The Broken Hill Company's Power Scheme on the Mulungushi River: Commencing the Driving of the Tunnel.

South Central Africa is more bountifully endowed with perennial rivers and with swift-flowing waters, which tumble over escarpments of great height, than is the Union, and as evidencing the fact that the industrial potentialities of these rivers and falls are now being realised it will be of interest to note briefly the essential features of the Rhodesia Broken Hill Company's water-power scheme on the Mulungushi River. The harnessing of the water-power of the South Central portion of the continent has been under consideration for some years past, and quite recently the Union Miniere du Haut Katanga employed some expert hydro-electric engineers from America to investigate the possibilities of generating electric power from the Keni Falls on the Lufira River and the N'Zilo Gorge on the Lualaba or Upper Congo for the purpose of supplying electric power to a large leaching plant at Panda 20 miles from the famous Kambove Mine. It has, however, remained for the Rhodesia Broken Hill Company on the British side of the Congo-Zambesi watershed to make an actual start with the application of water-power to the base metal industry

The Mulungushi scheme is not likely to witness completion for the next couple of years, but it is a fact that the preliminary work already has been commenced and the tunnel upon which work is now being concentrated and which will assist in the control of the flow of the Mulungushi will be completed before the advent of the next rainy season.

The Mulungushi water-power scheme aims at harnessing water power from the Mulungushi River at a point distant from Broken Hill about 34 miles to the east. The Mulun-

In the Gorge of the Mulungushi: The Tunnel to control the flow of water is being driven through the cliff in the middle of the picture.

[illegible] north of Broken Hill, and below the power site is joined by the Mwomboshi River. Both rivers flow into the Lunsemfwa, which, in turn, flows into the Luangwa, and the Luangwa flows into the Zambesi at Feira. At a point 32 miles east of Broken Hill a large camp is being established, and nearby the Mulungushi is imprisoned between sheer walls 200 feet high. At the top of this gorge a large storage dam is being planned, and a tunnel of dimensions 15 feet by 12 feet and 300 feet in length is being driven rapidly with a view to regulating the flow of water. At places in the gorge the river is 60 feet deep. A large service establishment is being constructed, and from here the flow will be fed into the water race 11,000 feet in length to the head bay at the top of the escarpment, where the Mulungushi falls 1,170 feet. A pipe-line will take the water down the cliff to the Pelton wheels at the bottom, and it is estimated that 10,000 horse-power or more can be generated, but, in the first instance, a capacity of 2,500 horse-power only will be required. If necessary the power supply can be augmented by utilising the falls of the Mwomboshi River. The total catchment area of this region is estimated at 1,110,000 acres, and the maximum flow of the Mulungushi is 2,400 cusecs. It is intended to transport material the next dry season and to erect the following rainy season. It is probable that the power station will be running in the early part of 1925. The total equipment will weigh approximately 3,000 tons, and to transport this through difficult country means a huge task. The falls of Mulungushi constitute a magnificent sight, and are three times the height of the Victoria Falls, but are not in one unbroken leap, and are comparatively narrow.

Electrification of Congo Railways.

In connection with the utilisation of the magnificent waterways and cataracts of Central Africa for the needs of modern industry it is also of great interest to learn that details of the proposed electrification of the Matadi-Leopoldville line, which links the Congo estuary with the navigable waters of the river, have now been explained by M. Franck, the Belgian Minister for the Colonies. He says that studies of the cataracts which prevent navigation in the section of the Congo between the two terminal points of the railway have shown that more than 100,000 horse-power can be obtained from a hydro-electric plant, while leaving very large reserves for subsequent development. At the outset electrical operation of the railway will not require more than 30,000 horse-power. As coal is at present imported from Europe for the use of the locomotives, electrification will permit more economical working of the line provided that the traffic develops at the anticipated rate. In order to justify electrification it is estimated that an annual traffic of 175,000 to 225,000 tons is necessary. The present volume carried by the line is about 140,000 tons. It is estimated that the tapping of the Katanga traffic by the new Bas-Congo-Katanga route now under construction will in the near future add 100,000 tons to the existing traffic between Matadi and Leopoldville, so that electrification will not be completed until the point at which the capital cost of the work will be justified has been attained. The cost of electrification is placed at 50,000,000 francs. The amelioration of the track will take four or five years, and the work of electrification will then be taken in hand.

Water power which it is proposed to harness in the Congo.

Harmony Proprietary.

The report of the Harmony Proprietary Company to the 30th June, 1923, states that it has been found impossible for the company in its present form to raise working capital for the development of the estate by placing the £48,300 of unissued 8 per cent. debentures created and available for that purpose. The directors now submit the following scheme: The company to sell its property and undertaking for £113,000 in cash, which will satisfy the whole of the liabilities, including the amount which the holders of the debentures have agreed to accept in satisfaction of their claims for principal and interest, but excepting any temporary advances made in connection with the carrying out of the scheme. Purchasers to resell the property and undertaking, free from all liabilities with the exception stated, to a new company to be formed under the English Companies Acts with a capital of £250,000 divided into 1,000,000 shares of 5s. each; price of resale to be (a) not more than 999,993 shares, each credited with 1s. paid up, which are to be offered for subscription to shareholders in the present company at the rate of one new 5s. share, credited with 1s. paid up, for each share now held; (b) £131,500 in cash, out of which will be paid expenses of underwriting the subscription of 725,000 of the shares to be offered, thus providing a minimum sum of £145,000. An advance will be obtained for the cost of registering the new company and any other necessary expenditure, and moneys so advanced will be repaid with any interest or bonus by the new company.

Dividend Payers of the Far East Rand.

PROGRESSIVE MONTHLY RETURNS—PROFITS, GRADE AND COSTS FOR FIRST SEVEN MONTHS OF THE YEAR.

The following figures reflecting the progressive returns of the dividend payers of the Far East Rand up to the first seven months of the current year are published for the information of investors. The monthly profits disclosed in these statistics enable one in some degree to [illegible] the dividend paying possibilities of the companies concerned, and the distributions for the first half of the current year are attached hereto. Earnings are, of course, subject to deductions in respect of profits tax, etc., but it is [illegible] that the statistics given are of value and interest [illegible] in relation to profits, only [illegible] as estimating monthly [illegible] and working costs, etc.

BRAKPAN MINES.

Capital, £850,000, to be increased to £1,020,000.

1923.	Tons.	Revenue £	Yield Dwt.	Cost s. d.	Profit £	s. d.
January ...	64,600	110,408	7·94	21 0	42,623	13 2
February ...	59,000	109,573	8·72	22 8	42,618	14 5
March ...	56,500	103,970	8·65	24 3	35,410	12 6
April	60,500	106,327	8·27	21 11	40,620	13 5
May	67,000	115,472	8·62	21 3	44,154	13 2
June	65,000	118,729	7·83	22 1	47,064	14 5
July	66,000	115,319			47,706	

Dividend: 1922, Dec., 4s.; 1923, June, 4s.

GOVERNMENT AREAS (MODDER).

Capital, £1,400,000.

Ratio [illegible]	[illegible]	[illegible] p.c.	Government's share p.c.
39	44·20	16 ...	51·048
40	46·35	17	51·717
41	47·212	18	52·358
42	48·052	19	52·973
43	48·623	20	53·564
44	49·618	22	54·940
45	50·349	25	56·194

Exempt from Profits Tax. Capital redemption allowance, £11,887 per annum. Government's share, 1919, £665,370; 1920, £882,975; 1921, £896,210; 1922, £737,839.

1923.	Tons.	Revenue £	Yield Dwt.	Cost s. d.	Profit £	s. d.
January	150,000	278,820	8·35	17 10	145,363	19 4
February	134,000	247,368	8·44	18 7	122,676	18 4
March	145,000	255,196	8·50	18 4	137,169	18 11
April	142,500	265,779	8·71	17 9	139,399	19 7
May	153,000	288,855	8·41	17 7	151,280	19 9
June	147,000	276,590	8·45	17 7	146,591	20 0
July	159,000	279,176		17 7	149,286	

Dividend: 1922, June, 4s.; Dec., 6s.; 1923, June, 6s.

A Prospective Far East Rand Dividend Payer: Sorting Belts at New State Areas.

GEDULD PROPRIETARY.

Capital: Authorised, £1,500,000; issued, £1,228,002.

1923.	Tons.	Revenue £	Yield Dwt.	Cost s. d.	Profit £	s. d.
January	47,000	77,116	7·29	20 0	30,025	12 9
February ...	42,500	70,119	7·45	20 8	26,269	12 4
March	47,000	78,563	7·41	20 8	29,960	12 9
April ...	50,000	81,745	7·41	20 0	31,661	12 8
May ...	62,000	98,974	7·22	19 11	37,244	12 0
June ...	66,500	105,288	7·09	19 1	41,804	12 7
July	67,500	105,690		19/3	40.799	

Dividend: 1922, June, 1s. 3d.; Dec., 2s.; 1923, June, 2s. [illegible]

MODDER "B."

Capital, £750,000 [illegible]

1923.	Tons.	Revenue £	Yield Dwt.	Cost s. d.	Profit £	s. d.
January	66,000	148,200	[illegible]	21 8	79,973	25 5
February	58,000	129,171	[illegible]	21 0	68,575	23 8
March ...	64,500	137,[illegible]	[illegible]	21 6	68,359	21 2
April ..	64,000	13[illegible],429	10·22	2[illegible] 3	74,623	23 4
May ..	66,500	141,587	9·87	20 2	74,527	22 5
June ...	63,000	136,007	9·93	20 3	72,178	22 11
July ..	66,000	139,067		19 8	74,057	

Dividend: 1922, June, 1s. 6d.; Dec., 2s. 9d.; 1923, June, 2s. [illegible]

MODDER DEEP.

Capital: £[illegible] ([illegible] shares).

1923	Tons	Revenue £	Yield Dwt.	Cost s. d.	Profit £	Profit s. d.
January	44,700	106,411	10·59	17 11	66,422	29 8
February	40,000	94,787	10·81	17 10	59,182	29 7
March	44,800	102,187	10·64	17 6	63,863	29 2
April	42,100	97,800	10·68	17 10	60,325	28 8
May	45,100	105,077	10·60	17 10	65,472	29 0
June	45,000	108,062	10·74	17 8	65,468	30 0
July	44,200	106,477		17 9	67,220	

Dividend: 1922, June, 2s. 6d.; Dec., 3s. 6d.; 1923, June, 3s.

NEW MODDERFONTEIN.

Capital: £1,400,000 (10s. shares).

1923	Tons	Revenue £	Yield Dwt.	Cost s. d.	Profit £	Profit s. d.
January	114,000	226,391	9·22	16 4	133,429	23 5
February	103,000	207,140	9·17	16 6	122,562	23 9
March	113,000	226,870	9·41	16 8	132,693	23 6
April	110,000	222,216	9·48	16 5	131,921	24 0
May	120,000	247,963	9·59	15 10	152,760	25 6
June	116,000	234,186	9·25	16 2	140,566	24 3
July	118,000	241,044		16 1	146,154	

Dividend: 1922, June, 2s.; Dec., 5s.; 1923, June, 5s.

SPRINGS MINES.

Capital: Authorised, £1,500,000; registered, £1,500,000; issued, £1,445,750; Debentures, £54,420.

1923	Tons	Revenue. £	Yield. Dwt.	Cost s. d.	Profit £	Profit s. d.
January	54,000	104,550	9·01	21 11	45,309	16 9
February	47,000	94,528	9·39	23 1	40,314	17 2
March	50,200	103,194	9·75	22 9	46,797	18 8
April	49,000	100,230	9·62	22 11	44,126	18 0
May	54,500	107,071	9·14	22 0	47,021	17 3
June	52,000	102,191	8·99	22 8	43,212	16 7
July	54,200	104,657			47,670	

Dividend: 1922, June, nil; Dec., 3s.; 1923, June, 2s. 6d.

VAN RYN DEEP.

Capital: £1,196,892

1923	Tons	Revenue £	Yield Dwt.	Cost s. d.	Profit £	Profit s. d.
January	61,500	123,955	9·0	20 10	60,008	19 6
February	54,200	110,922	9·29	21 7	52,516	19 4
March	57,400	118,527	9·27	21 5	56,981	19 11
April	56,500	114,966	9·23	21/1	55,363	19 7
May	63,300	126,336	8·95	19 10	63,534	20 1
June	61,000	122,078	8·90	20 0	61,084	20 0
July	63,000	123,814		19 6	63,057	

Dividend: 1922, June, 2s.; Dec., 6s.; 1923, June, 5s.

REZENDE MINES, LIMITED.

Report for the quarter ended June 30, 1923.—Shaft sinking, nil; development, the footage for the quarter amounted to 1,404 ft.; tonnage mined: from stopes, 18,943 tons; from development, 2,211 tons; total tonnage mined, 21,154 tons, less waste sorted out (12.07 per cent.), 2,554 tons; tonnage milled, 18,600 tons; total yield: from mine, 9,268.05 fine ozs. Working revenue: From mine, £39,933 1s. (42s. 11.26d. per ton); from premium, £1,800 (1s. 11.22d. per ton); total, £41,733 1s. (44s. 10.48d. per ton). Working costs (including development redemption, £5,580, equal to 6s. per ton), £23,979 0s. 4d. (25s. 9.41d. per ton); working profit, £17,754 0s. 8d. (19s. 1.07d. per ton); sundry revenue, £521 14s. 1d.; total profit, £18,275 14s. 9d. Capital expenditure during the quarter amounted to £2,817 6s. 7d. (excluding amount spent on development, £6,019 12s. 5d.). Development.—Development values in the eastern section on the 8th level east of the circular shaft were only moderate, but west of the shaft continue to be well above the average of the mine. The reef was struck in the 9th level crosscut, assaying 43 dwts. over 61 inches. In the Streatham Section values were only moderate, 70 feet sampled giving 7 dwt. over 34 inches. Native Labour.—The number of natives under engagement at end of quarter was 1,105.

A Promising Barberton Venture.

The above pictures show the progress of development at the Cleopatra Gold Estates, Ltd., in the Barberton district, under the active supervision of Mr. W. T. Hallimond, Managing Director of the Company. Work is proceeding in two adit levels, all the faces showing good values. The erection of a mill is contemplated. The pictures show, reading from left to right: View on Concession Creek; No. 1 Adit; and Dump of Ore ready for milling.

The Future of the E.R.P.M.

GOVERNMENT TO APPOINT COMMISSION TO INVESTIGATE—STATEMENT BY MINISTER OF MINES.

Last Monday a deputation waited upon the Minister for Mines regarding the Cinderella, and Mr. Malan, in reply, said he welcomed the opportunity of taking the public into the confidence of the Government in the matter.

"We are dealing with a matter which is of vast public importance. At the same time it is right that I should remind you that you are also dealing with very large private interests," said the Minister.

The question before them was how to secure the continued working of the E.R.P.M. and the opening of the Cinderella Mine. This question could be approached from two points of view—firstly, what could be the assistance to the individual mine to secure the continuation of the E.R.P.M. and to work the Cinderella; and, secondly, was it possible for these two mines to work not as individual mines but as a combination?

The Pumping Costs.

Dealing with the first point, Mr. Malan said that the E.R.P.M. Company had approached the Government with a definite proposition to the effect that the Government should for a term of years guarantee pumping expenses up to and not exceeding £8,000 a month.

This proposition the Government was not prepared to entertain, for the following reasons: (1) That assisting the E.R.P.M. in pumping charges would not open the Cinderella; (2) It would not in any way assist unemployment, which is one of the objects of the deputation; (3) It is by no means certain that the assistance for two or three years towards pumping charges would be enough to secure the future working of the E.R.P.M.

"For these three reasons I am not prepared favourably to consider the proposal of giving assistance to the E.R.P.M. in the methods which have been applied for," he said. "I now come to the question of giving industrial assistance to the Cinderella, as a working proposition so as to get it open. This company has not approached the Government in the same way as the E.R.P.M. has done, but Mr. Greig has put forward a proposition. I have asked him the question whether the company is prepared to entertain such a proposal and he gives me the assurance 'Yes,' because he has been talking to them and they raised no objection. That is not very definite."

Will Not Assist E.R.P.M.

"It seems to me that the first objection to such a proposal is that it will not assist the E.R.P.M. Working the Cinderella as a separate mine will not secure the future working of the E.R.P.M., and therefore that part of the object of the deputation falls to the ground. Secondly, it will not give any substantial relief in regard to unemployment, because, first of all, a shaft will have to be sunk so as to get to the reef, and restarting this mine will absorb a comparatively small number of men. It will take time before it will absorb any appreciable number of men. Thirdly, I think it will create a very serious and maybe a dangerous precedent to single out an individual mine and say, 'We will assist you with the taxpayers' money.' If a principle is to be taken we might select a different mine and may not necessarily start with the Cinderella. There are other mines which may have equal or better claims. At all events I am not prepared at this stage to entertain the proposition."

Provisions of the Gold Law.

"I want to say a word here with reference to the Gold Law," continued the Minister. "This Law provides that if a mine is lying dormant and not being worked, the Government can call upon the company to work it. If they refuse or fail to do so, the Government may appoint a commission to inquire into the reasons why the mine is not being worked. The commission reports to the Government, and if the Government is satisfied that the reasons given for not working the mine are inadequate, the Government calls upon the company to work it. If they then refuse after the reports which show that they should and can work it, the Government can then lease the claims out to somebody else, the company retaining its right to the movable assets.

I put it to you that although the Cinderella spent £1,400,000 in the development of this mine, and it is therefore in their interests to get a return on this money, they are not in a position, for reasons given, to find an additional £500,000 to restore the mine; the Government has felt that this is a sufficient reason, and that if they were to appoint a commission under the Gold Law the commission would probably find that this is a sufficient reason. But suppose the commission found that want of capital under these circumstances is not a sufficient reason, and the Government is to act. I am doubtful whether a court of law would empower the Government to confiscate £1,400,000 because the company could not raise an additional £500,000. The position, therefore, is: What can be done?"

"The Companies Should Co-operate."

"It seems to me that the interests of the public and the two companies demand that they should co-operate. If the E.R.P.M. is not assisted in some way, and closes down, the Cinderella will be flooded, and the possibility of ever working gold in the Cinderella may be lost to the State and the company itself; and, further, the closing down of the E.R.P.M. is not only a calamity for the E.R.P.M., but for the Cinderella. If the Cinderella is to be opened, surely its being worked from the E.R.P.M. which has the machinery ready, will ensure the continued life for some time of the E.R.P.M., and will also open the Cinderella, and so both objects will be attained. And, thirdly, such relief will give relief to unemployment and provide more scope for the men not in work now."

"The Government has felt that this is the road to a solution, and attempts have been made by friendly advice, even by bringing the men of the two companies concerned together, at Capetown, to discuss the matter, but up to the present no definite arrangement between the two companies concerned has been arrived at.

A Commission.

What I now propose to do is this. In view of the fact that it has become evident to me that left to themselves, the two companies are not likely to agree, I propose to appoint a small impartial commission, with the instruction that they should act as arbitrators, or "honest broker," between the two companies, and bring about a settlement or arrangement by which both mines would be worked. The commission will no doubt keep in touch with the Government, and I sincerely trust that with the backing of public opinion in this matter, a voluntary agreement will be come to.

Failing such an arrangement—which I would sincerely regret—it would be an instruction to the commission to report to the Government the terms they think would be a reasonable arrangement between the two companies. The terms will be published in a Blue Book and laid before Parliament at its next session, so that Parliament, which represents the public interests, will have all the facts before it, and will be in a position to deal with the situation, if necessary."

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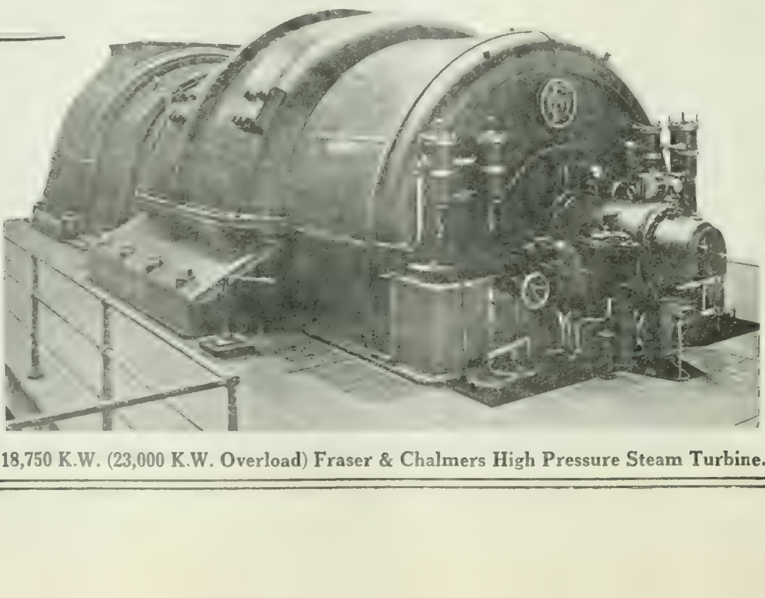

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Mining in Swaziland.

The following memorandum on mining done and being done in Swaziland was recently presented to the Swaziland Mineral Commission by the Administrator, Mr. de S. M. G. Honey. Before the outbreak of the Anglo-Boer War in 1899 a good class of anthracite coal had been discovered on Concession No. 19 M. and L. in the low veld. Mining there on any large scale will require railway connection with the coast for export purposes. Up to 1899 there was some activity in prospecting and mining for gold along the foothills of the Drakensberg range of Mountains in the North-west at the Horo, Wyldsdale, Havelock, Kobolondo, Piggs Peak and Forbes Reef Mines, and on some of these 10 to 20 stamp batteries were in use. Statistics of output of gold at this time are not available, but the only considerable amount then won was from the Forbes Reef Mine. At the same time the existence of alluvial tin in the valleys near Mbabane was known. A little gold and tin near Oshoek had also been discovered. There followed then the war period and general depression for a few years afterwards, so that it was not until 1905, 1906 and 1907 that mining for tin or gold was recommenced. Up to the present time no other minerals in payable quantities are known to have been discovered in the territory. Summarising the position—anthracite coal is known to exist in the low veld, tin in certain areas of the Mbabane and Mankaina districts, and gold along the western border north of the Usutu. Tin mining at Mbabane under the control of the Corner House, Johannesburg, and south of Mbabane by the McCreedy Tin Company, and Gold Mining at Forbes Reef and about Piggs Peak under various companies, assumed larger proportions about 1906. Details of output are given overleaf. The Forbes Reef and Horo were mined under tribute for a few years and development was continued on the Piggs Peak Mine until 1917 when operations ceased. The position in regard to small mines now being worked is shewn overleaf. The Tin Mines continued operations until a year ago when, owing to the drop in the market value of tin and to the exhaustion of ore reserves, the Swaziland Tin Company working at and near Mbabane went into voluntary liquidation, and the McCreedy Tin Company, ten miles south of Mbabane, restricted their operations for a time. During the present year the tin mines about Mbabane have been reopened by individuals who have acquired the rights from the Swaziland Tin Company, but operations are necessarily restricted on account of limited capital. The Central Mining and Investment Corporation have recently, under an arrangement with the Administration, carried out boring operations on their property in Concession 19 M. and L. in the flats to test the presence of bituminous coal. No report has been received, but it is understood that the expenditure incurred has not been effective in its object. The fact that the minerals are held in the main under concessions has no doubt had some effect in limiting prospecting by individuals. Reports have been made on various concessions at the instance of the holders, but these do not show (most of them of which the Administration has knowledge) any extensive prospecting by individuals. A list of concessions, attached hereto, in respect of which reports are available, contains references to these

A Group of Swaziland Mining Pioneers. Photo taken 30 years ago.

The Government has received in profits tax on gold won approximately £700 paid by the Piggs Peak Development Company, and £120 in respect of the Horo Mine. The following schedule, compiled from available records, shows the amount of tin and gold won on the various mines in the territory subsequent to the conclusion of the Boer War.

TIN.

MINE.	LOCALITY.	PERIOD.	TIN IN TONS.	REMARKS.
Swaziland Tin	Mbabane and Ezulwini	'07 to '22	6,328	Working.
M'Kinkomo Tin	5 miles south of Ezulwini ..	'08 to '21	764	Working.
Allen (Polongeni)	4 miles south of Mbabane ..	'09 to '13	42	Abandoned.
Forbes Reef Tin	Forbes Reef	'12 to '13	3	Not working.
Mdimba Tin	6 miles south-east of Ezulwini ..	1915	2	Not working.

GOLD.

MINE.	LOCALITY.	PERIOD.	GOLD IN OZS.	REMARKS.
Piggs Peak Development Company	Piggs Peak	'08 to '16	72,043	Not working.
Horo ([illegible]) .	20 miles north-east of Piggs Peak	'07 to '13	9,486	Not working Tribute.
[illegible]	Do. do.	'09 to '10	88	Do.
Forbes Main Reef	Forbes Reef	'07 to '10	5,698	Do.
Avalanche ..	Do. do.	'08 to '10	1,381	Development Not working.
Waverley	Do. do.	'11 to '12	8	Do.
Primrose	Do. do.		Nil.	Do.
[illegible]	Do. do.	..	Nil.	Do.
Mlembe (Havelock)	West of Piggs Peak	'20 to '22	Nil.	Tribute.
Black Diamond Creek	4 miles north of Piggs Peak ..	'11 to '14	127	Government lease under consideration.
K[illegible]londo .. .	7 miles North of Piggs Peak ..	'10 to '22	3,531	Tribute.
Lomati (Wyldsdale) .	On Lomati River, North-east of Piggs Peak	'10 to '22	2,139	Tribute.
Henderson & Forbes ..	Near Oshoek	1922	25	Makwana Tin Company now.

Crown Mineral Areas.

Nothing has been done on these with the exception of a small amount of tin mining on the Allen and Davis area (Mpolongeni). Steps are under consideration for the throwing open of this area, which has been abandoned by the lessees, and another area upon which the occurrence of tin has been proved.

NEW CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs for the month of July, 1923, of the undermentioned companies of the New Consolidated Gold Fields Group:—

Company.	Stamps Running.	Tube Mills Working.	Tons Crushed.	Gold Declared Fine ozs.	Working Cost per Ton Milled. s.	d.	Total Profit Declared, including Sundry Revenue.
Simmer and Jack	320	7	68,000	13,370	16	1·4	£3,816
Robinson Deep	180	10	71,600	22,866	18	1·6	35,770
Sub Nigel .	30	2	9,800	6,017	39	9·2	6,785
Totals	530	19	149,400	42,253	—		£46,371

Gold in Reserve.—Simmer and Jack, 716 ozs.; Robinson Deep, 2,79[illegible] ozs.; Sub Nigel, 1,775 ozs.; total, 5,284 ozs.

The revenue derived from gold for the month of July is calculated at the rate of £4 9s. 3d. per fine oz., less estimated gold realisation and exchange charges of 2s., or a net basis of £4 7s. 3d. per fine oz.

Shortage of native labour has adversely affected results for July, particularly at Robinson Deep and Simmer and Jack Proprietary Mines. There is no immediate indication of improvement in the supply of native labour.

GENERAL MINING AND FINANCE CORPORATION.

The July operations of the producing mines of this group were as follows:—

Company.	Tons Crushed.	Total Cost.	Cost per ton. s.	Total Revenue.	Profit
Aurora West ...	12,450	£12,659	20·34	£14,693	£2,034
Meyer & Charlton	14,300	15,010	20·99	35,113	20,103
New Goch	16,100	14,904	18·51	16,308	1,404
Van Ryn Estate	34,450	30,900	17·94	38,956	8,056
West Rand Con.	36,000	38,398	21·33	42,920	4,522
	113,300	£111,871	19·75	£147,990	£36,119

In calculating the revenue, gold has been taken at a value of 89s. 3d. per fine ounce, less estimated realisation charges.

TRANSVAAL SILVERS.—The output of this company for July totalled 118 long tons of lead bullion, containing 40,902 oz. of fine silver, representing a total value, based on the latest quotations for the metals, of approximately £15,213.

July Output.

NATIVE LABOUR SHORTAGE.

The serious shortage of native labour on the mines is reflected in a decreased output for the month of July. The number of working days was the same as in June, but there was a shortfall in the output of over 1,000 ounces. The number of natives employed has decreased by over 8,000 since May last. The price of gold, however, was 3d. per ounce higher during July, and this gave an increased value of about £5,000 on the reduced output. The following are the figures:—

Group Profits.

	May.	June.	July
Anglo-American	£91,175	£90,216	£95,376
Barnato	302,111	290,738	293,810
Central Mining-Rand Mines	454,585	419,581	446,189
General Mining	37,727	36,677	36,119
Gold Fields	48,650	47,627	46,371
Union Corporation	102,716	107,272	108,019
Totals	£1,036,964	£993,108	£1,025,884

	Ounces.
Total Output for July	754,306
Decrease on June	1,003
Witwatersrand Output	735,318
Decrease on June	675
Outside Districts' Output	18,988
Decrease on June	328
	£
July Value	3,366,091
Increase on June	4,966

Individual Returns.

	Ounces.	Inc.	Dec.
Aurora West	3,390	38	—
City Deep	41,430	3,562	—
Cons. Main Reef	18,538	4,076	—
Durban Deep	10,364	—	227
E.R.P.M.	29,450	—	1,950
Luipaardsvlei	3,858	—	899
Meyer and Charlton	7,957	—	483
Modder B	31,787	521	—
Modder Deep	23,734	311	—
Modder East	11,196	—	1,126
New Goch	3,726	—	338
New Kleinfontein	11,538	248	—
New Modder	54,766	864	—
Robinson	3,552	—	252
Rose Deep	13,331	243	—
Robinson Deep	22,866	—	740
Simmer and Jack	13,370	—	668
Van Ryn Estate .. .	8,873	513	—
Van Ryn Deep	27,745	587	—
Village Deep	16,549	—	355
West Rand Cons.	9,778	152	—
Wit. Deep	12,029	—	248
Brakpan	27,497	—	3,306
Ferreira Deep	8,238	—	447
Geduld	23,564		18
Geldenhuis Deep	13,579		678
Government Areas	62,556	421	—
Langlaagte Estate	28,404	—	15
New Primrose ...	1,307	—	86
New States	4,539	2,771	
Nourse	14,109		603
Randfontein	50,535	—	335
Springs	24,826	1,465	—
Witwatersrand	10,428	—	788
Wolhuter	7,541	—	261
Crown Mines	67,510	—	974
Miscellaneous	7,858	6,192	—

Outside Districts.

Sub Nigel ...	6,017	190	—
Glynn's Lydenburg	1,579	129	—
T.G.M.E. ...	5,782	43	—
Miscellaneous	5,610	—	690

Native Labour.

The returns supplied by the Witwatersrand Native Labour Association show the following results:—

	July 31	June 30
On Gold Mines	166,443	170,865
On Coal Mines	16,020	15,598
On Diamond Mines ..	2,893	3,063
Totals	185,356	189,526

Mining Men and Matters.

The ordinary general meeting of the Chemical, Metallurgical and Mining Society of South Africa will be held in the Scientific and Technical Club, 100 Fox Street, Johannesburg, to-night at 7.45. Dinner will be served in the Club on the evenings of general meetings from 6.45 by arrangement. Business: Presidential Address, by F. W. Watson. Papers for reading: (1) "A New Method of Dust Determination," by Sir R. N. Kotzé (published in the July Journal; will be introduced by the author, who will exhibit the apparatus); (2) "Some Notes on the Application of Air Screws to Mine Ventilation," by F. A. Steart. Reply to Discussion: (1) "The Value of Rand Gold Mining Investments," by W. A. Caldecott and G. J. V. Clarence; (2) "Notes on Cupellation Losses," by H. R. S. Wilkes.

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Anglo-American Reports.

A QUARTER'S RESULTS.

The gold mining companies' directors' reports for the quarter ending June 30, 1923, show the following results:—

Brakpan Mines, Ltd.—Crushed 192,500 tons; working revenue, based on standard value of gold, £333,522 2s. 5d., 34s. 7·81d. per ton milled; working costs, £209,352 7s., 21s. 8·88d. per ton milled; a total of £124,169 15s. 5d., or 12s. 10·84d. per ton milled. Add estimated premium on gold, £7,007 18s. 8d.; working profit for quarter, £131,177 14s. 1d. Add surplus realised on estimates of premium for three months to May 31, 1923, £3,958 15s. 11d.; proceeds of gold recovered from the amalgamating plates rendered available through the completion of the tailings concentration process, £14,451 17s. 1d., £18,410 13s., a grand total of £149,588 7s. 1d. No allowance has been made in the foregoing figures for taxation or the percentage of profits payable in connection with the acquisition of the lease area. The capital of the company was increased to £1,020,000 by the issue of the 170,000 new shares referred to in circular issued to shareholders under date June 8. Dividend No. 22 of 20 per cent., equal to 4s. per share, free of Union Dividend Tax, was declared on June 15, 1923, payable to all shareholders registered as at June 30, 1923. The expenditure on capital account amounted to £20,061 11s. 3d. The development footage for the quarter totalled 6,181 feet, and gave the following results: Sampled, 3,595 feet, averaging 11·40 dwts. over 38·94 inches; payable, 2,395 feet, averaging 15·41 dwts. over 38·75 inches.

Springs Mines, Ltd.—Crushed 155,500 tons. Working revenue, based on standard value of gold, £302,941 1s. 1d., 38s. 11·56d. per ton milled; working costs, £175,132 17s. 10d., 22s. 6·30d. per ton milled; a total of £127,808 3s. 3d., or 16s. 5·26d. per ton milled. Add estimated premium on gold, £6,550 13s. 7d.; working profit for quarter, £134,358 16s. 10d. Add surplus realised on estimates of premium three months to 31st May, 1923, £4,371 17s. 4d.; total, £138,730 14s. 2d. No allowance has been made in the foregoing figures for taxation or the percentage of profits payable in connection with the acquisition of the lease area. The expenditure on capital account amounted to £12,774 4s. 3d. The issued capital of the company was increased to £1,115,736 during the quarter by the issue of 25,000 new shares at £3 per share in terms of the Lease Agreement. Dividend No. 8 of 12½ per cent., equal to 2s. 6d. per share, free of Union Dividend Tax, was declared on the 15th June, 1923, payable to all shareholders registered as at the 30th June, 1923. The development footage for the quarter totalled 5,900 feet, and gave the following results: Sampled, 3,500 feet, averaging 13·57 dwts. over 22·78 inches; payable, 1,510 feet, averaging 20·46 dwts. over 29·88 inches.

West Springs, Ltd.—The final instalment in respect of the debenture issue of £350,000 was received on the 2nd July, 1923. A final call of 1s. per share on all partly paid shares was made on the 14th May, 1923, making all shares in the company fully paid up. The expenditure for the quarter amounted to £73,632 9s. 6d. Reduction plant, etc.—The construction of the railway siding is approaching completion, and excavations for the new plant are proceeding satisfactorily. Work in connection with the foundations of various units of the plant is well in hand. Development.—The No. 1 Diagonal Heading has connected with the workings of the Springs Mines, and work is now being concentrated on the necessary subsidiary development preparatory to milling. The development footage for the quarter totalled 4,832 feet, and gave the following results:—Sampled, 3,700 feet, averaging 9·31 dwts. over 29·77 inches; payable, 985 feet, averaging 23·26 dwts. over 35·38 inches.

The value of fine gold produced during the quarter was calculated at the following prices:—April, 87s. 6d. per fine ounce; May, 88s. 6d. per fine ounce; June, 89s. per fine ounce.

Metal Prices and Outlook

Messrs. H. A. Watson & Co., Limited, metal and mineral brokers, of Liverpool, favour us with the following metal report, dated 23rd July, 1923:—There is no great change to report in the general situation, nor can any be expected until the political situation is cleared. Copper fell away in sympathy with American quotations, and a recovery in New York was at once followed by a corresponding advance in Standard on this side. The demand for consumption is small but steady. Tin showed some attempt at recovery, and values were advanced during the week ending 13th, but heavy sales again depressed the market, and prices lost £6 from the highest. A better demand induced a sharp rise on Friday last, and to-day's market is reported stronger with higher prices. There is no new feature to report about lead, and prices have kept fairly steady, whilst spelter is inclined to improve. Standard Copper.—Values eased off on 16th inst. to £64 17s. 6d. cash and £65 12s. 6d. three months, but a rather improved consumption helped prices, which advanced on the 20th to £66 cash and £66 15s. three months. To-day's close is rather lower at £65 12s. 6d. cash and £66 7s. 6d. three months. According to the Metal Exchange official returns, the stocks of copper in warehouse in the United Kingdom were: 30th June, 1923, 27,776 tons; 31st May, 1923, 26,536 tons; 30th April, 1923, 25,460 tons. Closing quotations for manufactured copper are as follow: Strong sheets, £100 per ton; best select, £69 to £70 10s. per ton; electrolytic, £72 15s. to £73 per ton. Quotations for best select during the past fortnight were as follow: July 10th, £68 15s.; July 13th, £69 5s.; July 17th, £68 15s.; July 20th, £69 15s. Standard Tin.—The market improved on the 12th inst. to £183 1s. 3d. cash and £184 2s. 6d. three months, but aggressive selling caused a reaction and values again fell away, closing on 17th at £177 13s. 9d. cash and £178 16s. 3d. three months. A marked change took place on Friday, the close being £183 3s. 9d. cash and £184 3s. 9d. three months, followed by a further sharp rise to-day to £186 11s. 3d. cash and £187 13s. 9d. three months. The estimated total visible supplies at the end of the month are as follow: 30th June, 1923, 17,543 tons; 31st May, 1923, 18,263 tons; 30th April, 1923, 19,058 tons. Sulphate of copper is quoted £25 10s. to £26 per ton f.o.b. Liverpool. Spelter.—Closing prices are £30 5s. cash and £29 17s. 6d. forward. Lead closed to-day at £24 10s. cash and £24 2s. 6d. forward. Bismuth remains at 10s. per lb. Nickel is quoted at £125 to £127 10s. per ton. Quicksilver.—To-day's quotation is £10 to £10 5s. per flask. Bar silver closed at 31⅛d. spot and 30 13-16d. forward. Manganese ores nominally quoted at 1s. 9d. per unit. Antimony.—English £39, foreign £28 per ton. Wolfram.—To-day's value is about 13s. to 13s. 6d. per unit for 65 per cent. ore. Molybdenite.—To-day's quotation is about 52s. 6d. per unit for 85 per cent. ore. Bank rate.—Raised to 4 per cent. on 5th inst.

The Mine Offices: New State Areas.

The Week in the Sharemarket.

A NERVOUS OPENING—PRICES HARDENING—OUTLOOK BRIGHTENING.

Owing to adverse political news the market suffered a severe setback at the beginning of the week. Prices have, however, hardened again owing chiefly to the healthy position of the market, which is very short of stock and carrying few open accounts. Business is still restricted and the movements recorded above have produced no new feature. The most interesting of Corner House stocks at the moment is Transvaal Gold Mining Estates which have considerably improved on buying here and from London. It is considered that this concern is entering on a more prosperous period, and that a dividend may be paid at the end of the next financial period. The company is said to be making useful sales of timber, and some satisfactory results have been obtained from prospecting. Barnato stocks call for very little comment. States have been steady on London business. New States remain remarkably steady and are very difficult to deal in. Randfonteins, which will improve considerably later in the year, are already becoming scarce, and rise on the least demand It is considered that most of the " spade work " at this property is finished and that progressive returns may once more be expected. Of Goldfields stocks, Robinson B have again been prominent. The A shares also had small business, and the debentures had buyers, without a sale being recorded. General Mining stocks have been featureless. Union Corporation stocks recorded an improvement in Modder Deep, which were in some demand, presumably for the dividends. Gedulds have been a firm market. The Anglo-American Group of stocks have been more or less active throughout the week Brakpans keep steady, and are inclined to advance. Springs and West Springs are also being quietly bought Anglo-Americans, with diamond shares, seemed dull.

Diamond shares have not attracted much attention. Consolidated Diamonds present no new features. The new Theron 5s shares came on to the official list to-day. The New Eland result for the July working, 2,732 carats from 13,325 loads, is considered satisfactory. The position at the Crown Diamond Mine is that half of the plant is working, and the remainder will be gradually brought into commission The results are said to be up to expectations Nothing has been done in the local market in Rhodesians. Tins and silvers have been uninteresting. There have been a few unofficial transactions in Transvaal Platinums. The investment market records some deals in loans. A satisfactory amount of money seems to have found its way into the new 5 per cent. loan. There have been buyers of Reserve Banks. Although the market displayed extreme nervousness early in the week, it was satisfactory to note how quickly prices recovered on the smallest buying London will very soon again appear here as a buyer, and it is probable that this time the movement will be maintained It is evident that it would be useless to attempt to raise prices in the face of adverse political situations oversea, but, as this bad state of affairs is gradually being relieved, we may anticipate a corresponding improvement in market conditions here.

	Fri. 10th.	Sat. 11th	Mon. 13th.	Tues. 14th.	Wed. 15th.	Thurs 16th.
Anglo-Am. Corp.	22 3*	22 3*	22 4½	22 4*	22 3	22 0*
Apex Mines	5 0*	-				5 0*
Aurora Wests	-	5 9*	5 10*	5 9*	-	6 6†
Brakpan Mines	58 0	58 0*	58 3	57 9*		
Brick and Potteries	4 0*	4 0*	4 0*	4 0*	4 0*	4 0*
Bushveld Tins	-			0 3*		
City Deeps	51 3*	52 6	53 6*	53 0	54 0	52 6
Clydesdale Colls.	17 3†	17 3†	17 3†	17 3†	17 3†	17 3†
Con. Diamonds	19 6*	19 6*	19 6*	19 6*	19 6*	19 6*
Con. Investments			28 0*			28 0*
Con. Main Reefs	9 9	9 6*	9 7*	9 3*	9 3	9 4
Corontaion Freeholds	0 5*	0 6*	0 6*	0 5*	0 5*	0 7*
Do. Syndicates	5 3	5 3*	5 6	5 0*	5 0*	5 6
Crown Diamonds	6 7*	6 7*	6 8	6 6*	6 6	6 6
Crown Mines	48 0	48 3	48 6	48 3	47 9*	47 9*
Daggafontein Mines	2 1*	2 1	2 2	2 1*	2 1*	2 2*
Durban Road Deeps.	11 6*	11 9*	11 6	11 0*	11 10	11 6
East Rand Coals	1 0*	1 1*	1 1	1 1*	1 0*	1 1*
East Rand Deeps	0 7*	0 7*	0 7*	0 7*	0 7*	0 7*
East Rand Props.	4 6*	4 10*	4 6*	5 0	4 11*	4 3*
Eastern Golds	0 4	0 4*		0 4*		0 4
Ferreira Deeps					5 6	
Frank Smith Dmds.	3 0*	3 3	3 0*	3 0*	3 0*	3 0*
Geduld Props.		59 6	59 3*	59 3*	58 6*	58 6*
Geldenhuis Deeps					1 6*	1 6*
Glynn's Lydenburgs	12 6*		12 6*	13 0†	12 9*	12 9*
Govt. Areas	111 3	112 0	112 3	111 9*	111 9*	112 6
Hume Pipes	8 0*	8 0*	8 0*	8 0		
Lace Props.	7 6	7 6*	7 6*	8 0†	7 6*	
Langlaagte Est.	23 6	23 3*	23 3	22 9*	22 9	23 0
Leeuwpoort Tins	4 6*	4 9†	4 6*	4 8†	4 9†	4 3*
Lydenburg Farms	2 7	2 6*	2 6*			
Meyer and Charltons		65 0*				
Middelvlei Estates	1 0*				1 0*	1 0*
Modder B.'s	23 0*	23 9	23 6*	23 3	23 0*	23 6*
Modder Deeps	39 9	40 0	40 3	40 0*	39 6*	40 0
Modder Easts	5 7*	5 9	6 0	5 9*	5 9*	5 9*
Natal Navig. Colls.		26 3*	26 3*		26 9*	26 6*
National Banks	120 0*	120 0*	120 0*			
New Eland Dmds.	40 0†	38 0*	38 0*	37 0*	37 6*	37 6*
New Era Cons.	6 9*	6 10*	0 10*	7 0	6 10*	6 10*
New Geduld Deeps	0 6*	0 6*		0 6*	0 6*	
New Kleinfonteins	4 9*	4 9*	4 9*	4 10*	4 9*	4 9*
New Modders	79 3	79 6	80 0	80 0	79 9	80 0
New Primrose	3 6†	3 0*	3 6†	3 6†	3 6†	
New State Areas	31 0*	32 0*	32 0*	32 0*	32 0*	31 6*
Nigels		6 0*	6 0*	6 6*	6 6*	6 0*
Nourse Mines	14 3	14 3	14 3*	14 0*	13 9*	13 9*
Pretoria Cements	36 0*	37 0	36 6	37 0†		36 6*
Rand Mines		50 0*	50 6*	50 0*		
Rand Nucleus	1 1*	1 1*	1 1*		1 2*	1 2
Randfontein Est.	19 4½	19 3*	19 6*	19 3	19 0	19 1½
Do. Centrals		11 6	11 0	11 0	11 0	
Roberts Victors	7 0†	7 0†		7 0†	7 0†	7 0†
Robinson Deep "A"	32 3	33 0*	34 4	33 0*	32 6*	32 6*
Robinson Deep "B"	14 1*	14 10½	15 3*	15 6	14 9	14 7*
Rooibergs	2 10*	3 3†		3 3†	2 10*	
Ryan Nigels	2 9*			4 0†	4 0†	4 0†
Rose Deeps						10 0*
Shebas	2 3*			2 3*	2 3*	
Simmer and Jacks	2 10*	2 10*	2 11	2 10	2 8*	2 8*
S.A. Breweries	30 0*	30 0*	30 6*	31 0*	30 0*	30 0
S.A. Lands	3 2	3 2*	3 2*	3 2*	3 3	3 2*
S.A. Reserve Bank	£130		£125*	£125*	£129*	£129*
Springs Mines	47 0	47 6	47 6	47 6*	46 9*	46 6*
Sub-Nigels	10 6*	10 10½	10 6	10 7½	10 6*	10 6*
S.A. Alkali	11 0†	11 0†	11 0†	11 0†	9 0*	
S.A. Townships	10 0*		10 3*		10 6*	10 6*
Transvaal Lands		14 0*				
Trans G M Est	10 0	11 0	11 6	11 0	10 9	11 0
Transvaal Silvers	13 0*	-	13 0*	13 0*	13 0*	13 0
Tudors	0 6†		0 6†	0 6†		
Union 5 per cent.	£100¾	£100¾*	£100¾*	£100¾*	£100¾*	£101
Van Dyks	0 9*	0 9*	0 9*	0 9*		0 10*
Van Ryn Deeps	63 0	63 6	63 9*	64 6	64 0	64 0
Van Ryn Estates	12 9*	12 6*	13 0*	12 6*	12 0*	
Village Deeps	11 0*	11 0*	11 0*	11 0*		
West Springs	19 6	19 6*	19 9	19 6*	19 4*	19 6*
Western Rand Est	2 0	1 10	1 9*	2 0†		2 0†
Witbank Collieries	30 0*	31 0*	31 0*			
Witwatersrands	13 3*	13 6*	13 6*	13 9*	13 3*	13 3*
Wit Deeps	14 3	14 3*	15 0	14 9	14 7*	14 9
Zaaiplaats Tins	5 0	5 0	4 6*	4 10*	4 0	4 9

* Buyers. † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

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TOPICS OF THE WEEK.

The Swaziland Commission.

In another part of this issue we print an interesting account of mining in Swaziland presented to the Mineral Development Commission by Mr. Honey, the Administrator of the territory. The Commission, it will be remembered, was appointed by H.R.H. the Governor-General recently, and consists of Mr. Feltham, K.C. (now Mr. Justice Feltham), Major A. P. Swinburne, Chief Inspector of Mines in the Union, and Mr. William Pott. Many witnesses were heard during the sittings of the Commission at Mbabane, and Major Swinburne, as technical member of the Commission, has drafted a memorandum setting forth his views on the throwing open of the concessions. We hope in our next issue to print some further extracts from the evidence led and from Major Swinburne's memorandum.

Native Labour Recruiting.

Mr. C. W. Villiers presided at the annual meeting of the Native Recruiting Corporation this week, and reviewed its varied activities in detail. *Inter alia*, he said: "During the year the total number of natives distributed to and engaged by the mines was 177,171, as against 204,633 during the year ending June 30th, 1922, a difference of 27,462. Of this total, 134,334 were British South Africa natives and 42,837 Portuguese natives, compared with 147,127 British South Africa natives and 57,536 Portuguese natives during the previous year. The average number of natives in the employ of members for the period July 1st, 1922, to June 30th, 1923, was 178,669, as compared with 199,183 for the previous year (excluding the strike period). At the 30th June, 1923, there were employed underground 54,310 Portuguese and 81,970 British South Africa natives, while at the 30th of June, 1922, the numbers employed underground were 62,302 Portuguese natives and 76,[illegible] British South Africa natives. From these figures it will be noted that there was a reduction of nearly 8,000 in the number of Portuguese natives employed, which reduction is entirely due to the restriction placed on the recruiting of Portuguese natives by the Union Government. The present unsatisfactory condition of the labour supply on the gold mines would have been avoided had this restriction been relaxed earlier in the year. It was quite clear that owing to the excellent crops throughout the native territories there would be a considerable falling off in the supply of British South Africa natives during the winter months, and, further, that owing to renewed activity in the diamond mining industry a considerable number of British South Africa natives would be absorbed by that industry who would otherwise have been available for the gold mining industry. In June, 1922, only 3,385 natives were employed on diamond mines, but the number was increased to 10,925 in June, 1923. Most of this increase in natives came from British Basutoland, which accounts for the decrease in this class of labour obtained for the gold mines. There is no doubt that more British South Africa natives could have been recruited during the year, but unfortunately the disorganisation of the labour supply caused by the strike in 1922 has not yet been completely overcome. At times during the period under review it was impossible to employ all the natives offering for work, and recruiting had to be restricted. Your Board have proposals in hand at the present time which, if given effect to, will, it is hoped, largely overcome this difficulty, should a similar position arise."

The Empire Exhibition and South African Mines and Railways.

The British Empire Exhibition to be held at Wembley Park next year will contain much that is of interest to the mining world generally, and a great deal that will appeal specially to all interested in mining in British South Africa. All sections of the mineral industry will be represented, and amongst the exhibits that specially call for remark will be those of the Witwatersrand, the Transvaal Coal Mines, the Diamond Mining Industry, the Natal Collieries, and the various mines of Rhodesia. The exhibit of the Transvaal Chamber of Mines will be specially interesting. In addition to films, an exhibit will be shown consisting of a pyramidical heap representing ten tons (1-200,000th part of the Rand's monthly crushing) composed of washed banket ore, surmounted by a small structure, two feet square, built of highly polished banket and standing on a pedestal. In the centre will be a piece of gold representing the normal contents of the ten tons, and surrounded by other pieces of gold to illustrate the proportion in which the gold is disposed of. The railway exhibit will consist of a small train comprising a new electric locomotive and what is called a twin dining car, that is two cars, of which one is entirely devoted to the restaurant proper, the second consisting of the kitchen and staff accommodation; a main line coach, part of which including the coupe and four-berth type, will be arranged for model night travelling, and part will show the carriage by day, with facilities for reading and writing. The train will be placed in a model station and, if the arrangements can be satisfactorily completed, meals will be provided daily right through the exhibition, using, so far as possible, South African products, and charging the ordinary S.A.R. tariff. Models will also be shown of the new electric line between Maritzburg and Mooi River, of engines and rolling stock generally, and of the Durban graving dock. A quantity of railway literature and many photographic enlargements will also be seen in this section. In addition to these exhibits by the Rhodesian Mines, the Transvaal Coal

Mines and the Natal Collieries should prove specially attractive, and it may be added that this journal is arranging a stall at the Exhibition which will be illustrative representative of mining in British South Africa and of the part played by the *South African Mining and Engineering Journal* in the development of the mining and allied industries of South Africa during the last third of a century.

Importance of East Coast Labour.

Since February of this year the Gold Mines of the Witwatersrand have had their native labour complements reduced by approximately 10,000 boys. This shortage tends, of course, to restrict the field for white employment, and has adversely affected the premier industry of the country at a very critical time, that is to say, at a period when the mines were just nearly getting into their stride after the strike of last year. The principal cause of this decline in the native complements of the mines has been the restriction of recruiting in Portuguese territory, an area upon which the Rand always has depended in a large degree for its supplies of coloured labour. Recently the Government authorised the recruitment of an additional number of natives from Mozambique, and the position at the moment is that the gold mines are just about holding their own and replacing wastages by drawing upon both East Coast and British South African sources of supply. But it is essential in the interests, not only of the mining industry, but of the whole of the country that the Witwatersrand should do more than this. One of the essential safeguards against depression and the aggravation of unemployment on the Rand is the maintenance of an adequate supply of coloured labourers engaged on reasonably long contracts. It is characteristic of the East Coast boy that he is generally prepared to sign on for a longer contract than the British South African native is prepared to do. The Mozambique labourer's efficiency is thus generally greater than that of the B.S.A. native, and hence he is a more stable and beneficial factor in industry. It is most essential that the gold mines should always have at their disposal a sufficient supply of East Coast natives, and, obviously, the recruiting machinery, in order to consistently achieve this much-desired result, should function steadily and uninterruptedly. Some people seem to imagine that if the mines are short of labour the managers have only to ring up Delagoa Bay on the telephone and they will have as many thousands of boys as they require waiting at the shaft heads to start work next morning. In point of fact, it takes a very considerable time to re-organise recruiting machinery that has once been thrown out of gear, and it should be obvious, too, that some weeks must elapse before the natives recruited in Mozambique arrive on the mines and become efficient coloured workmen. For these reasons then, it is absolutely imperative in the interests of the mining industry and hence of the country, that an adequate supply of East Coast labour should be continuously available. Wastages resulting chiefly from the expiration of contracts have constantly to be made good, and to replace shortages quickly and effectively calls for a continuous stream of boys from their kraals on the East Coast to the Rand.

Head Office Charges of the Witwatersrand Mines.

It is probable that few large industries in the world are operated upon such an economic basis of head office administration charges as is the Witwatersrand Gold Mining Industry. This matter was investigated some time ago by the Low Grade Mines Commission, and more recently by the Mining Industry Board (otherwise known as the Brace Commission), and in each instance it was found that there was urgent necessity for "group control" head office administration and centralised buying of stores, and it was found, too, that the costs of these departments "can certainly not be regarded as excessive." It may be of interest to investigate this aspect of the Mining industry in respect of a few typical mines of the Witwatersrand, and in the following table is shown a comparison of head office expenses with working costs (excluding capital expenditure) on certain mines during the period specified:—

Mine	Period	Head Office Expenses				Total Working Costs				
		Total			Per ton milled	Total			Per ton milled	
		£	s	d	d	£	s	d	s	d
Brakpan Mines	1922	[illegible]	0	0	[illegible]	655,226	5	3	[illegible]	10
City Deep	1922	[illegible]	4	5	4	[illegible]	18	10	[illegible]	5
Con. Main Reef	[illegible]	11,586	7	8	6	[illegible]	1	2	33	4
Crown Mines	1922	[illegible]	14	10	[illegible]	2,156,265	4	7	[illegible]	[illegible]
E.R.P.M. Mines	1922	[illegible]	19	3	[illegible]	1,408,142	10	7	25	11
Geduld Prop.	1922	[illegible]	1	9	7	470,685	14	6	20	5
Modder Deep	1922	[illegible]	1	9	[illegible]	423,345	3	8	19	0
Modder B	1922	[illegible]	5	2	6	691,103	15	4	23	0
New Modder	[illegible]	[illegible]	3	2	4	1,080,453	11	11	22	10
West Rand Con.	1922	[illegible]	17	3	7	438,230	18	3	[illegible]	8
Village Deep	1922	[illegible]	[illegible]	5	6	[illegible]	17	5	25	4
Con. Langlaagte	1922	9,878	19	10	6	447,883	15	1	22	0
Govt. G.M. Areas	1922	30,057	9	7	4	[illegible]	6	1	18	9
New Primrose	1922	5,093	15	1	6	165,555	2	3	19	4
Rand Central	1922	15,829	3	7	5	[illegible]	12	5	22	0

Probably few people outside the big mining offices are aware of the multitudinous and exacting duties which devolve upon the head offices of the mines. Head office administration charges include, for instance, charges in respect of secretarial, transfer, buying, and consulting engineers' departments, London and Paris offices, stationery, printing and advertising, telegrams and cables, directors' and auditors' fees, etc., and to anyone who has the slightest knowledge of the vast amount of detailed, careful and highly skilled technical and clerical work involved in all this it must be patent that the figures given above clearly show the head office administration of the mines is conducted on strictly economic lines. As shown in the foregoing table, head office administration charges constitute but an infinitesimal fraction of the total working expenses of the mines.

Rand Gold for India.

The first consignment of gold to travel direct from Durban to India will leave South Africa on Monday. It will be worth some £25,000 and will be consigned to Bombay. Hitherto all Rand gold not intended for America has been taken to London and redispatched from there to the East, thus travelling around two sides of a triangle. Under the new arrangements there will be a direct saving on the gold so transmitted, and small as this may be, it nevertheless amounts to an economy of value.

India takes no less than 5,000,000 ounces of the Rand's gold annually, which, capitalised at the present gold price, means an equivalent of £22,500,000 sterling. The fact of the direct future transmission of such big sums in gold to the East may be regarded as of significance, doubtless, in view of South African commercial interest in the development of Oriental markets. Settlement, it is understood, will take place in London.

How the Rand's Native Labour Supplies may be Jeopardised.

According to a correspondent of the Argus Newspapers, who recently has been touring the mineral fields of Central Africa, it is probable that within the next few years the base metal mines of Katanga, and of Northern Rhodesia, together with new railways, etc., will require something like 100,000 natives. The correspondent goes on to point out that the areas in which these mines are situated do not contain large native populations, and he shows that at the present time the mines in question are chiefly dependent upon adjacent districts for their supplies of native labourers and are likely to be more dependent than ever on these districts in the future. One aspect of the native labour problem of the Rand which, hitherto, has not received any attention and which is of the very foremost importance to South Africa, is touched upon by the Argus correspondent when he refers to the possibility of the Belgians coming to an agreement with the Portuguese for the provision of an adequate supply of native labour for the development of the vast mineral resources of the Congo. He says: "In view of the fact that there is an insufficient labour supply in the Union for mines, industries, farms and railways, it is imperative that the Union should establish, consolidate and maintain its extraneous labour supplies before other expanding enterprises in South and Central Africa establish themselves in fields which hitherto the Union has exploited almost exclusively, and which it is now neglecting, notably Mozambique. When the Lobito railway is through to Katanga the position will present a close parallel to that of the Rand and Delagoa, and what is then to prevent the Belgians and the Portuguese from making a commercial treaty similar to the Union-Mozambique Convention, whereby Portugal grants to the Congo a recruiting monopoly in all Portuguese colonies in return for a large percentage of the copper traffic through Lobito."

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

* * *

Labour Shortage on the Reef.

The Crown Mines' mill was again hung up over last week-end owing to shortage of native labour. In the absence of the requisite tramming boys, it was found impossible to feed the mill, which, in consequence, was stopped. This is the second occasion within a month on which a stoppage of the batteries on this property has been enforced.

* * *

Union 5 Per Cents.

It is officially announced that subscriptions to the third issue of Union of South Africa 5 per cent. local registered stock, 1929-39, have been satisfactory, and the following particulars of the position as at August 11 have been communicated: New money, £1,484,839; conversion of Treasury bills, £533,200; conversion of 5 per cent. (tax free) local registered stock, 1921-36, £7,005,289; premiums on conversion of latter added to stock of new issue, £77,460; making a total of £9,100,788 represented by 4,126 applications. The first, second and third issues of this stock comprise some 8,000 holders with an aggregate holding of £20,100,788

* * *

Fire at Newcastle Colliery.

A destructive fire occurred at the Newcastle Colliery about one o'clock on Wednesday morning, when the headgear and screens on the property were totally destroyed. The scene of the disaster presented a strange sight. Once valuable machinery lay bundled up in a huge mass, and galvanised iron was twisted into every conceivable shape. Nothing unusual was noticed by the native on watch until the alarm was given at one o'clock. Despite the determined manner in which miners and natives worked, the whole property was destroyed an hour afterwards. The damage is estimated at between £12,000 and £15,000

* * *

The Truth About Platinum.

Discussing recent sensational finds of platinum reported in the Western States, the "Engineering and Mining Journal"-Press has the following very pertinent comment, which is not without application to this country:—

"The U.S. Bureau of Mines, in Bulletin 270, has described a fire method for assaying for platinum that has the stamp of approval of many reputable chemists from all over the country. However the following facts are significant:— During the last twenty years the discovery of rich platinum ore in different Western States has been reported at least a hundred times! It has invariably been admitted that fire assays would not detect the presence of the precious metal but that secret "chemical" methods of analysis had to be employed; but—here is the crux of the thing—we have never yet heard of a single ounce of platinum bullion being obtained from the treatment of these mysterious ores. What good is platinum "ore" in which the platinum eludes the man who tries to recover the metal for market? Frankly, we are sceptical of these latest reported finds."

* * *

"T.C.L." Reduction of Capital.

A further extraordinary general meeting of the Transvaal Consolidated Land and Exploration Co. held this week confirmed the resolution passed at a previous meeting whereby the capital of the company was reduced from £607,008 15s., divided into 971,214 shares of the value of 12s. 6d., each fully paid, to the sum of £465,119, divided into 930,238 shares of 10s., fully paid. The reduction is to be effected by: (a) Cancelling 40,976 shares, formerly the property of ex-enemies, purchased from the Custodian of Enemy Property; and (b) by returning to the holders of the remaining 930,238 shares in the company the sum of 2s. 6d. per share in cash, and by reducing the nominal amount of the said 930,238 shares from 12s. 6d. to 10s. each.

* * *

Rhodesian Mining.

Glowing reports come in with regard to development on the Turk claims recently acquired by Mr. T. Meikle, says a correspondent of the "Bulawayo Chronicle." These are situated near the Bembesi River. In the same district the Lewis and Marks group are continuing development on the K. and B. property, which they have under option. A crosscut is going in from the new vertical shaft at 200 ft. and it is said some rich leaders have already been encountered, though the reef proper is not likely to be intersected for another week or two. At the Ace Mine, near the Kokwe River, the erection of the mill has been completed and crushing will start this week-end. There appears to be considerable activity in the neighbourhood of the Sherwood Starr Mine, apart from that connected with the development of the property itself. The Goldfields have taken an option on some adjoining claims believed to contain the extension of the same reef, and the Globe and Phoenix people are also doing exploratory work in some adjacent ground. A noteworthy feature of the last output returns is the good showing made from several properties which have at one time or another been floated and after a more or less lengthy career under company management closed down apparently for good. Special attention may be directed to the fine output from the Eldorado—£3,100 worth of gold from 1,200 tons, a figure considerably above the average grade during the palmy days of this well-known mine. Rumour has it that Mr. Eaton has struck values further along the reef again. It may be remarked that the output returns for the month once more show a good increase and give the most practical evidence of the revival of mining activity.

Dr. L. HEYMANN, Ph.D. (Berne),
Consulting Chemist & Metallurgist.

ANALYSES OF COAL, MINERALS, WATERS,
FOODS AND OILS UNDERTAKEN.

Experiments and Research Work in All Branches
of Chemical Industry.

LABORATORIES:
18, SIMMONDS STREET,
JOHANNESBURG.
P.O. Box 875. Telephone 4599.

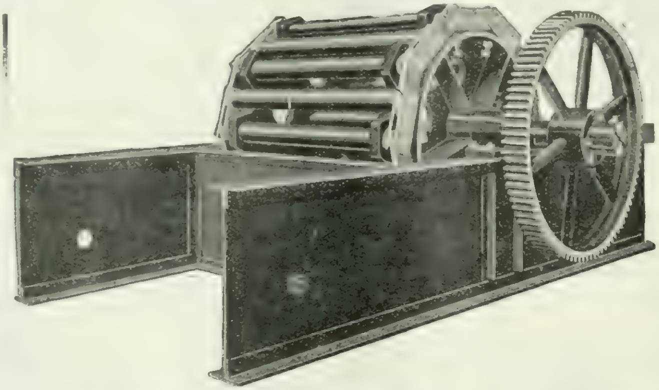
No. 1 CUTTING RUNNING COSTS.

ROSS DROP-BAR FEEDER-GRIZZLIES

Cannot Choke and Require no Attention. They are running practically continuously and have been for years without [illegible] beyond occasional lubrication and a very small horse-power demand for driving.

They are built to stand up to the hardest kind of mine and quarry usage without fail; taking their maximum loads dumped [illegible] and delivering the material properly screened to conveyors, etc., evenly and without shock, however irregular the feed is to them.

They are manufactured for all normal conditions and outputs, and for any size aperture between [illegible]in. and 8in. For unusual conditions and duties they are specially designed and built, as indicated below.



SCREENING UNDER UNUSUAL CONDITIONS.

Early in 1921 The New Ulm Stone Quarry Co., Minnesota, installed a Ross Feeder-Grizzley to take a quarry output of [illegible] tons an hour of hard granite—carrying a very large percentage of pieces weighing from 2 to 2½ tons—dumped direct on to the grizzley from a height of about 8ft. The products are under and over 4in.

Although hundreds of thousands of tons of this abrasive material have been dealt with by the screen since 1921, under these conditions, it has not been repaired in any way nor have any renewals been necessary.

SUCCESS AND THE ACKNOWLEDGMENT.

This year—1923—The New Ulm Quarry Co. installed another of these Ross Screens.

Should severer conditions than these ever be put up to us we are quite prepared to deal with them successfully.

These Screens are patented in Great Britain, British Possessions and Foreign Countries.

MANUFACTURED BY

Sandycroft, Ltd.
LONDON & CHESTER
INCORPORATED IN GREAT BRITAIN

General Engineers and Contractors

Makers of Mining and Electrical Machinery

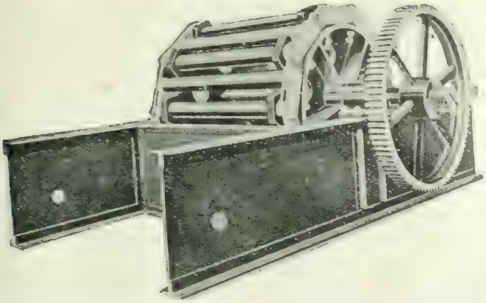
Telephone 2794
P.O. Box 4453

REID BROTHERS BUILDING,
Corner of Main and Harrison Streets,
JOHANNESBURG, SOUTH AFRICA.

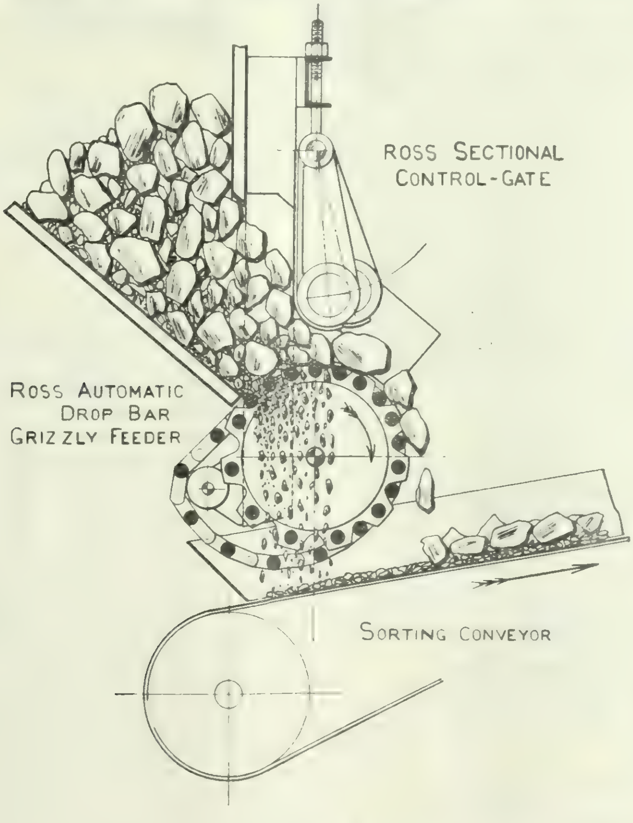
Telegrams :
"SANCROFT"

The Ross Automatic Drop-Bar Feeder Grizzley.

The Ross Automatic Drop Bar Feeder Grizzley, recently introduced by Messrs. Sandycroft, Ltd., will, we think, be of interest to our readers. We therefore give here some details. As will be gathered to some extent from the illustrations, the machine in its usual form consists simply of a strong steel shaft mounted in two bearings and driven by suitable gearing. On the shaft are securely keyed two cast iron or cast steel spiders or centres carrying a number of equally spaced bars between them forming a squirrel cage. In addition to these cage bars there is another independent set of bars connected together in an endless chain by a double set of steel links and pins in the standard arrangement. In the upper half of the squirrel cage—which is the active screening portion—a definite number of the chain bars rest in notches in the spiders and in between the cage bars. As there are several more bars in the chain than there are fixed bars in the cage (in the screens illustrated in style A and B there are 13 and 11 respectively), the chain always hangs in a loop below the cage whether revolving or not. The effect of this is that the screening apertures automatically open out at their lowest point, thus clearing the bars of all fines. When screening the cage slowly revolves, taking the chain of loose bars round with it. The oversized material, as it is fed forward, is shaken up and tends to turn over. At the same time a succession of perfectly clean screening apertures come continually under the material to be screened as it moves forward.



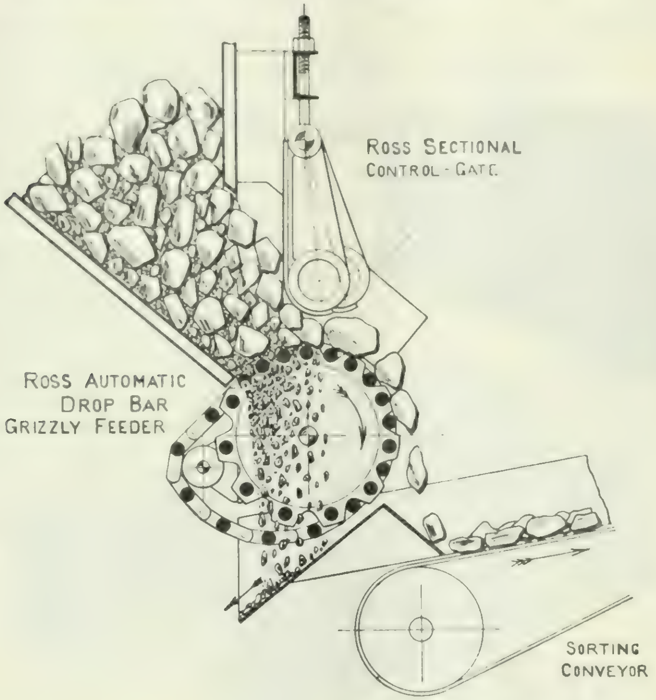
A modification—apron type—consists of three shafts in bearings, one of which is driven by gearing. Each has two spiders; on these run two endless chains of bars. The action is similar to that of the cage type, but the modification has the advantage of making possible a very large screening area without unduly increasing width or head room, as the apron screen can be made almost any length within reason. It is stated that this type is suited for handling large outputs and comparatively fine screening, and is being used for washing and preliminary sorting purposes. For all ordinary screening work mild steel rolled bars of round section are the best, but for special purposes other material and shapes can be used. The photo type illustration given above shows one of these feeder screens with driving gear and mounted in its frame, forming a self-contained unit. The feed aprons and chutes have been removed so as to show more clearly the screen itself.


ROSS SECTIONAL CONTROL-GATE
ROSS AUTOMATIC DROP BAR GRIZZLY FEEDER
SORTING CONVEYOR

CUT A

Cut A shows a similar machine taking ore from a storage bin, separating it and feeding it on to a sorting conveyor belt for delivery into the main storage bin. The fines in this case act as a bed for the oversize during sorting.

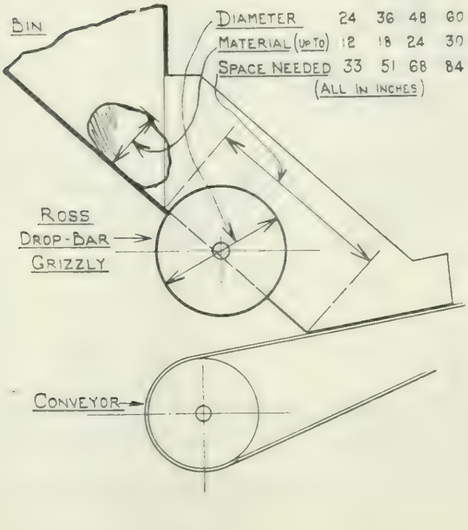
Cut B illustrates a standard arrangement for screening and delivering [illegible] to bins.


Ross Sectional Control-Gate
Ross Automatic Drop Bar Grizzly Feeder
Sorting Conveyor

CUT B

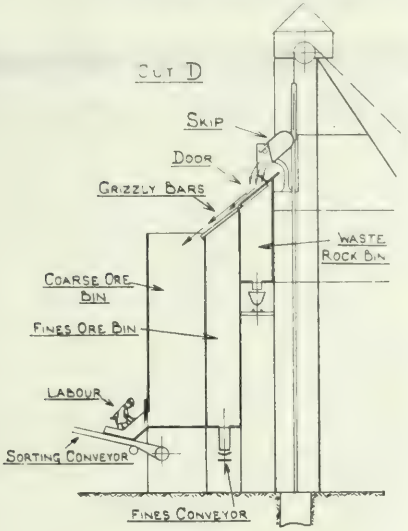
Cut C gives a table of four standard sizes of these Ross feeder-screens and states the maximum size of rock each size will handle and the space required in each case. The best travelling speed is naturally governed by the duty

CUT C

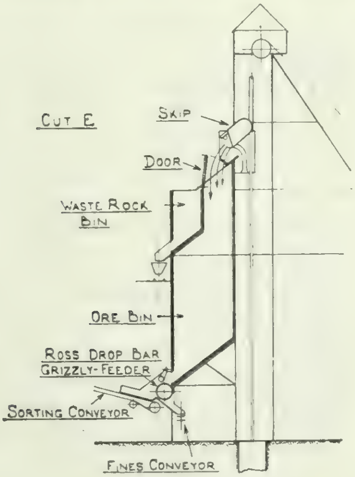


factors, etc., but is usually about 30 feet per minute, corresponding to about [illegible] of the drive shaft. The power required to drive varies from ½ b.h.p. to 5 b.h.p. for large screens and outputs. Capacities may be anything up to 200 tons per hour. It is stated that these screens require no attention beyond occasional oiling of bearings, and that they will at a fractional cost per ton separate and deliver automatically and continuously, at an even rate of feed, year in and year out, any screenable material, the makers going as far as to guarantee users against breakages or necessity for renewals over a period of two years. It is claimed that work is being done to-day by Ross Screens which was previously considered too severe for any machine. As a case in point, we have been given some particulars taken from actual operating records of one of these grizzlies now in its third year of working in a granite quarry owned by the New Ulm Stone Quarry Company, Minnesota. The feed contains a large percentage of pieces weighing over two tons each, and is delivered in 5-ton dumping cars at the rate of 20 per hour, the material falling down a 60 degree slope from a height of eight feet. Everything below four inch is screened out, the oversize being delivered to a large jaw crusher, and the screen clearing itself in time to receive the next car load. There are no attendants. The power demand is only one B.H.P. per hour. So far there have been neither renewals nor repairs, although the screen handles about 200,000 tons each season. A second screen was installed at this quarry early this year—1923.

Cut D shows one of the more usual arrangements of head frame and bins in use on the Rand, and Cut E shows how economies can be affected by the introduction of a Ross screen. With the usual fixed grizzley screening is intermittent, and the feed to the conveyors is likely to be intermittent. The doors over the waste bin have to take the wear and tear of all the ore as it passes over them. It is necessary to have attendants to look after the feeds to the conveyors. Three bins are required. With a Ross Screen installed, the feed is steady to the conveyors whatever the amount of ore in the bin, no ore passes over waste bin gates, there are no attendants, and only two bins are required. We are informed by Messrs. Sandycroft, Ltd., that the experience of the inventor, Mr. W. Ross, is at the disposal of anyone planning to re-model old plants or laying out new ones, and he will be glad to advise on schemes, draw up plans, and submit proposals. Communications addressed to him c/o Messrs. Sandycroft, Ltd., would have his personal attention.



— Old Type —



The Ross Drop-Bar Grizzly-Feeder & Headframe Economy

— New Type —

Taxation and the Mines.

The mining industry has issued the following statement in denial of certain allegations by Mr. Badenhorst, M.L.A., of Riversdale, in a speech to his constituents. The allegations were to the effect that while farmers could barely make ends meet and were heavily taxed in every way, the mines and capitalists were favoured by the Government. The statement points out that the mining industry is in no wise favoured by the Government; indeed that the contrary is the case. The gold mines have to pay no less than 3s. in the £ income tax, or 15 per cent., individuals pay only 1s. in the £, or 5 per cent. increasing by a sliding scale up to 2s. in the £, or 10 per cent. The net production of mining in 1921, i.e., the surplus left after all costs of production, such as wages and stores have been deducted, consisted of 13.2 million pounds. Of this amount 5.1 million pounds, or over 38 per cent., was taken by the Government, in one way or another, leaving only 8.1 million, or barely 62 per cent., for the shareholders. The shareholders take all the risks. If a mining area turns out poor and becomes unpayable, the Government stands to lose nothing, but the shareholders may lose practically every penny they put into the venture, and yet 7s. 6d. of every 20s. profit earned by the mines is taken by the Government, leaving only 12s. 6d. for the shareholders. The statement points out that these facts are incontrovertible, and ought to be widely known in justice to the mining industry.

THE SOUTH AFRICAN ALKALI, LIMITED.

The report of operations at the works for quarter ended 30th June ,1923, is as given hereunder: As already reported in the Press, production of soda was started on the 12th of June, and from that date to the end of June, the output was 64.9 tons of soda ash, of excellent quality and purity. The soda section of the plant is running efficiently, producing an average daily output of approximately 4½ tons by the end of June, and is being gradually brought to its full capacity. The salt section is practically completed, and will be in operation shortly. The rest of the machinery and plant is running smoothly and satisfactorily.

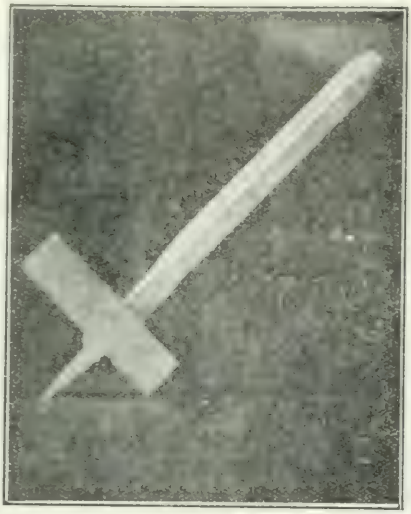
LEEUWPOORT (AFRICAN FARMS) TIN MINES, LTD.

The report of operations for quarter ended 30th June, 1923, is as follows: Tonnage milled, 12,000 tons; concentrates recovered, 141.5 tons; average grade of concentrates, 60.7 per cent.; working costs, £18,769; working costs per ton milled (including development, 5s., realisation and head office charges), 31s. 3d.; capital expenditure, £1,840. Crushing operations are now on a normal basis and improved returns may be anticipated during September quarter. As no concentrates have yet been sold, since production was restarted, no estimate of profits has been given.

'Phones 44 and 548 Germiston. Railway Siding No. 19
Telegrams: "FOUNDRY," Germiston.

East Rand Engineering Co., Ltd.,
New Industrial Sites,
——GERMISTON.——

General Engineers.
Iron and Brass Founders. Machine Moulding.



Sanderson's Specialities

"PAX" NON-BREAK STEEL FOR SHOCK TOOLS

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INDUSTRIES SECTION.

How the Gold Mines Help Trade.

OVER £1.000.000 FOR FARMERS AND FOOD PURVEYORS—£800.000 FOR COAL—HUGE BILLS FOR MACHINERY, TOOLS AND IRONMONGERY—OVER ONE MILLION A MONTH SPENT ON SUPPLIES.

It is not perhaps realised how good a customer is the mining industry to South African trade and industries. But even last year, despite the three months' stoppage, their expenditure on supplies amounted to no less than £11,045,512, while the previous year the figure was £14,383,223, according to figures contained in the latest report of the Transvaal Chamber of Mines.

Nor is this huge sum spent exclusively or even mainly with the merchants who specialise in the supply of mining material, though the salaries and cost of office establishments represented in the considerable number of these firms carrying on this business amounts to quite an appreciable item in the commercial affairs of the community.

But the benefits are much more widely distributed. Well over one million pounds per annum is spent on food for the natives employed on the mines. Last year they consumed over 32¼ million pounds of meat, at a cost of £400,739; 554,846 bags of meal, costing £362,630; 5,630,776 lbs. of beans, valued at £33,878; the groceries bill amounted to £36,692; vegetables came to £56,439, and "sundry food, including bread," represents an item of £149,616. Malt and cereals for beer cost £28,017; rice £8,404; fish £4,307, and salt £2,627.

Million Pound Items.

Timber represents another big item in the mines' expenditure, totalling last year no less than £819,797, while the coal bill came to £814,200. For electric power and light the mines paid £1,174,295—another big industry being thus very largely maintained. Well over one million pounds was also spent on explosives, no less than 435,213 cases of gelignite and gelatine dynamite being bought at a cost of £1,122,816, while safety fuses represent a further item of £185,410, and other explosives cost over £180,000.

The manufacture of candles is now an important South African industry, and the expenditure on this commodity, of which nearly 5¼ million lbs. were used, totalled £170,195. As an illuminant carbide—another local product— is coming into favour, and of this nearly 5 million pounds were purchased, at a cost of £81,634. South Africa is now manufacturing hose and hose fittings, though importers are putting up a very keen fight to maintain their footing in this market, which is a well worth-while proposition, seeing that last year it represented an item of over £94,000. Belting is still an imported product, though local manufacturers hope to remedy this, and in this again there is an annual expenditure of something like £120,000.

Cement is also a South African product, and on this nearly £60,000 was spent last year. Another necessarily "local product"—compressed air—was purchased to the value of £351,499. Concrete pipes, blocks, etc., cost £10,532; disinfectants £11,363. Cyanide is, of course, a very much bigger item, amounting in quantity to over 5½ million pounds and in cost to £308,681, and lime cost £123,000. Chemical, assaying and smelting requisites represent another item of over £100,000, and cloth; canvas, blanketing, matting, etc., over £25,000. Bricks cost nearly £20,000, and even brushware amounts to the useful sum of £12,579.

Care for Employees.

Although transport on the mines is so largely electric fodder for stables costs no less than £27,175. Evidence of the care taken for the employees is furnished by the figure of £34,948 for hospital and ambulance requisites; oil skin suits and gum boots are provided at a cost of £15,727; food, coffee, etc., supplied to white employees amounts in the course of the year to £7,271. Motor cars and accessories represents an item of just under £12,000. Soap was purchased to the value of £9,500 and soda £8,900. Even stationery and printing is an appreciable item in an industry of these dimensions, last year costing £62,138

Machinery and Plant.

It is however, when we come to the machinery and plant items that some big items are reached. Machinery and machine tools stand at £481,133, machinery spares other than electrical £233,016; electrical machinery £248,807; electrical machinery spares and fittings £82,109; pipes and pipe fittings were purchased to a total value of £333,105; rails, crossings, sleepers, etc., £193,492; trucks and spares £118,904; rock drills cost £39,905, while rock drill spares came to £283,113; rock drill steel cost £216,402, and other steel supplies came to nearly £160,000; wire ropes (a large proportion of which are now made in South Africa) cost £215,263; shoes and dies (of which about 50 per cent. are South African manufacture) cost £122,693; tube mill requisites represent an expenditure of £72,000; zinc and zinc discs £86,414. Lubricants cost £154,000; packing, £35,630; petrol, £19,000; paraffin, £14,422; paint, tar, driers, etc., £23,666; ironmongery over £80,000; iron nearly the same figure; hand tools, picks, shovels, etc., £105,506; castings (brass and iron), £138,000; and "sundry articles" £89,796.

Gold Production and Sales.

The South African output of gold last year totalled 7,683,719 ounces. This was disposed of as follows: New York 4,491,981 ounces, India 2,846,015 Continent 177,993, Straits Settlement 84,606, Trade 73,997, Egypt 8,375, West Africa 503, and East Africa 249 ounces. The average market price of gold sold during the year was 93s. per fine ounce; as compared with 106s. 10d. the previous year, when the output totalled 8,671,924 ounces. It has been calculated that the total premium from the beginning until March 31st last amounts to approximately £25,500,000 for the Witwatersrand production.

Working costs on the Witwatersrand last year totalled £22,919,416, or 21s. 2d. per ton milled as compared with £30,088,805 the previous year, when the average per ton milled was 25s. 8d. The declared estimated working profit last year was £7,768,631, or 9s. 11d. per ton milled, while in 1921 it was £11,102,935, or 9s. 6d. per ton.

In 1921 the tons milled totalled 23,400,605 while last year this figure dropped to 19,512,614 the result, of course, of the three months' stoppage. It is interesting, however, to note that the working profit per ton for the nine months of last year was the highest since 1912 when it reached 10s.

The Transvaal's production of gold last year represented 47·4 of the world's total, while the previous year it had reached the record figure of 52·4 per cent. During the financial year the Union Government received mining revenue in one form or another to the extent of £3,131,544. Just about half the total working costs were salaries and amounted to £44,678,800, of which £5,700,670 was paid to the whites (the average number employed being 17,611), and £3,884,900 to the 185,773 natives.

It is interesting to note that gold represents approximately half the total value of South African exports, last year's figures being:—gold £31,628,092; diamonds £7,501,754; other produce £24,119,441; imported goods re-exported; a total of £68,731,011.

The Transvaal's coal output last year totalled 5,380,294 tons, the value at the pit's mouth being £1,569,701. This is about a million and a half tons less than the previous year, and the value is nearly £800,000 lower. The diamond output last year was 415,707 carats, the estimated value being £1,192,657—a slight reduction on the previous year's figures. Transvaal silver, on the other hand, increased in output from 830,338 fine ounces to 1,117,642 ounces (the highest recorded) and the value reached £171,324.

INDUSTRIES AND ECONOMIC CONFERENCE.
FEDERATION VIEWS INVITED.

It is gratifying and significant to find that the South African Federated Chamber of Industries has been asked by the Prime Minister to submit its views on certain proposals which are to be brought before the forthcoming Imperial Economic Conference for discussion. These proposals are: (1) fuller development of natural resources; (2) inter-Imperial commerce, shipping, and communication; (3) co-ordinated action for the improvement of technical research; (4) organisation of economic intelligence; (5) survey of external commercial relations of the Empire; (6) increased preference; (7) disadvantages under which Dominion products labour in competition in Great Britain with foreign products.

The Federation has prepared a detailed memorandum on these points, and this is published in the current issue of *Industrial South Africa*.

In regard to the first point, the Federation observe that this country's base mineral wealth has scarcely been touched. "Lack of capital, difficulties of transport, and a failure on the part of world users of such raw materials to recognise the enormous potentialities of South Africa, account for the fact that so little has been done to develop our natural resources. . . . The Chamber is of opinion that it is necessary to offer definite advantages to controllers of capital in order to induce them to invest money in those channels which are best calculated to lead to a successful result. . . . It would appear feasible for Dominion Governments to legislate to relieve from payment of income tax for a certain number of years all new capital introduced for development purposes. . . . If some form of preference to manufacturers could be devised as an inducement for them to use in all public contracts, Empire raw material, an enormous market would be developed."

Preference and Labour Problems.

The Chamber adds that it has consistently advocated a continuance of the present preference to Great Britain and the Dominions and would favour an increase of such preference, providing the protection afforded the products of the factories and farms of the Union is not prejudiced thereby.

On the subject of labour the Chamber points out that the employment of native and coloured labour is compulsory owing to lack of adequate white labour for unskilled operations. A scheme of Empire patents, a proposal for the extended utilisation of British consuls and Dominion trade commissioners, and a general policy of Empire development are also urged by the Federation.

Are Factories Necessary?

The South African National Union is another influential organisation that has for years past been consistently advocating a policy of industrial development, and its fourteenth annual report adds yet another to the powerful pleas put forward by its chairman, Mr. J. Waldie Peirson. Discussing the question, "Are factories really necessary?" he says: "That we must have manufacturing industries is now admitted. It is the only way in which we can absorb the labour of those unfitted for agriculture or other occupations, which obviously will always be a large class. But there are still people who contend that South Africa cannot become a manufacturing country, that her chief role lies in primary production. They must surely fail to remember that, although the area of the Union extends to 302,781,000 acres there are not the large tracts suitable for the growth of crops such as are found in Canada, or as in South America, with its unbroken miles of pastoral country. In the Union we have a vast number of comparatively small propositions, large in the aggregate it is true, but from their restricted size more expensive to work than in the countries we have named.

"Although we have many rich farmers in South Africa, we shall never have a large class of men who have made great fortunes from the land. There is no comparison between the resources in this respect of South Africa and South America. Our agricultural opportunities are varied but they are individually of limited extent and consequently will not be able to give employment to more than a limited population. Therefore other channels of work must be sought, and manufacturing enterprises became an absolute essential. South Africa is a country rich in possibilities, but few of them are on a large scale.

Big Schemes in Progress.

"Some big schemes are in progress," adds Mr. Peirson, "the elevator system for grain, the several electrification schemes which will in addition to improving traffic facilities, provide cheap power in different parts of the country, the production of iron and steel on a large scale, and the drawing of wire, all of which are now well in hand, are means by which an enormous progress will become visible in the near future. And it is hoped these will act as a stimulus to further private enterprise.

"An active policy of development in all directions is the urgent need. South Africa is depending too much on a mining industry, concentrated largely in a single area. Consequently anything which disturbs the economic position in that centre is felt in some measure throughout the whole country. We must spread our efforts in every possible way."

GLYNN'S LYDENBURG.

The following are the particulars of the output for the month of July, 1923, in respect of the above company:—Tons crushed, 3,932; yielding, 1,539 fine ounces; estimated value of month's output, £6,886; estimated profit for month, £9. The low profit due to inclusion in working costs of development work from South Shaft and certain abnormal expenditure. The above figures are exclusive of expenditure for the month upon shaft sinking and power scheme amounting to £2,459. The gold output for the month is valued at £4 7s. 3d. per fine ounce net, after allowing for exchange and realisation charges.

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Gold Mining in Rhodesia.

"LONRHO" GROUP SUBSIDIARIES—PROGRESS AT THE SHERWOOD STARR AND SABIWA—"CAM" AND REZENDE LOOKING WELL.

The affairs of the various mines under the control of the London and Rhodesian Mining and Land Company in Southern Rhodesia have recently engaged a great deal of attention. At the two older and more established subsidiaries of the group, that is to say, the Cam and Motor and Rezende, the position and outlook are very satisfactory.

With regard to the Cam and Motor the forthcoming annual report will disclose a very substantial and all-round improvement in revenue, costs, profits, extraction, footage and ore reserves; and at the Rezende tonnage has been increased and methods for obtaining improved results from cyanidation have been adopted.

The Rezende Mine of the "Lonrho" Group.

With regard to the two new subsidiaries of the group, the Sherwood Starr and Sabiwa, both these propositions have advanced to a very satisfactory stage of development. At the former property, whereas there were only a few prospecting trenches six months ago, there are now, we understand, ore reserves of [illegible] of nearly [illegible].

At the Sabiwa the treatment adopted is crushing in cyanide solution, concentrating on tables, regrinding concentrates to all minus 200 mesh, [illegible] cyanide tube milling, thickening, agitation in [illegible] and filter pressing, and the plant is one of the most modern and up-to-date mechanical and metallurgical plants in Rhodesia. It is at present small, but has been laid out for extension. The power required is provided by a Crossley gas engine, fitted with wood burning producers, and it is expected to get very low working costs.

Globe and Phoenix Year's Results.

ORE RESERVE POSITION—THE LIFE OF THE MINE.

The net profit for the year 1922, after bringing in a credit balance of £23,889, and after transferring £63,812 from reserve, amounted to £113,890. Two dividends, each of 1s., tax free, were paid during the year, equivalent to a distribution of 40 per cent. on the issued capital. During the current year an interim dividend of 1s. 6d. per share, free of tax, was declared in March.

In the following table the results obtained in the last three years are set out for comparison:—

	Ore milled tons	Bullion sales at standard —value £	per ton	Costs £	per ton	Profit £	per ton	Gold premium £	Profit* [illegible] £
[illegible]	67,961	379,681	111 11	188,147	[illegible]	[illegible]	56 6	153,418	[illegible]
[illegible]	66,767	289,438	86 8	[illegible]	[illegible]	[illegible]	31 5	77,250	[illegible]
1922	75,397	317,275	84 2	198,679	52 [illegible]	118,596	31 6	31,690	[illegible]

* Including premium and sundry revenue, less London expenses.

The management is hoping to be able to extend the life of the mine by the discovery of fresh ore bodies on the Phoenix Reef, as well as on the Globe Reef, which in the early days was the main source of revenue. A vigorous plan of development has been decided on, for which £100,000 has been accumulated.

The theory which encourages this policy is that the values occur in zones and that by deeper mining good values will again be met with. From the 1st to the 8th level a good zone was encountered, followed by poor values to the 12th level. Between the 15th and 19th levels very rich ore was met with, while below the 19th the ore again became comparatively impoverished. There are, therefore, good grounds for assuming that the reef may again improve when greater depths are reached, and there are also possibilities of encountering payable ore in the upper part of the mine in places not thoroughly tested. During the past year the development work was [illegible]. The ore reserves at the end of the year were a little above, both in tonnage and in value, those at the date of the last report. The figures for the last four years are shown below:—

Ore Reserves at December 31.

	Tons	[illegible]
1919	108,182	[illegible]
1920	[illegible]	[illegible]
1921	110,000	[illegible]
1922	113,700	[illegible]

The new company [illegible] Namaqua Diamonds, Ltd., promoted by Messrs. Spaldings and [illegible], is acquiring the well known Kolmanskop [illegible] near Luderitz Bay.

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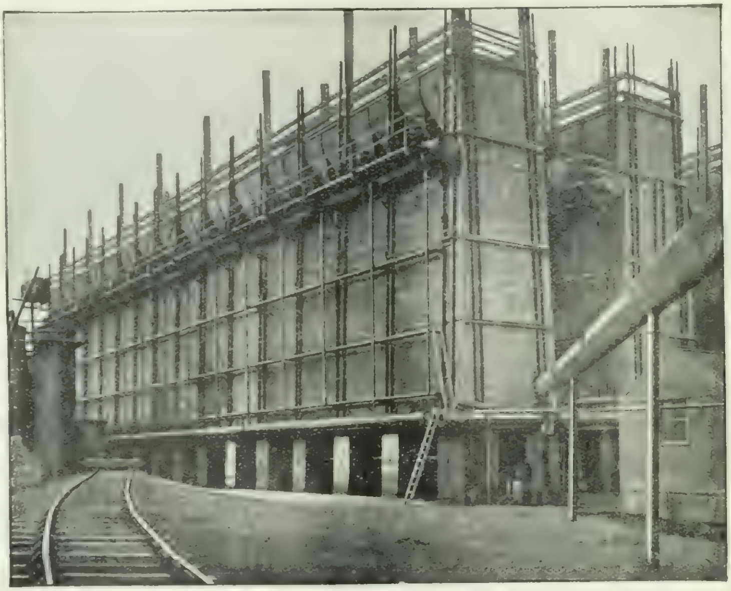

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TRADE SECTION.

Week in the Mining Material and Engineering Trades.

MARKING TIME—IRON AND STEEL HERE AND OVERSEA—PETROLEUM—AGRICULTURAL IMPLEMENTS—TIMBER AND BUILDING MATERIALS—LATEST METAL QUOTATIONS.

General.

Business is at the moment dull, with little activity on the Commercial Exchange or elsewhere. Merchants admit that things just now are not as bright as they would like to see them. All forecasts of an improvement in conditions about this time have gone by the board, owing to the European situation. The commercial community, however, is not too unduly depressed by the present pause, and realises that it is only a matter of time when the Union should forge ahead and leave the present depressed times as a legacy to the past. One outstanding fact in mining material business is that a fair amount of tendering is going on and that the mines are beginning to ask for substantial lines again, which, if placed locally, as the majority undoubtedly will be, is bound to give a fillip to our engineering shops.

Taking a general survey of the position to-day, said a commercial captain this week, one must admit that things are exceedingly quiet—there is no vim about business; even the building trade for the moment is hanging fire, although we know that there are many big buildings in contemplation; but the world's outlook just now is deterring many people from going on with well-considered schemes.

The money position is still very tight in South Africa, and probably the shortness of it to-day is keeping business back more than anything else. Until, he said, we get fresh money circulated in the country we are not going to see new ventures exploited, and even going concerns are bound to languish for the want of much-needed cash. At the moment there appears to be little hope of fresh capital being diverted to South Africa, of which we are so much in need, until we see some daylight in the European situation. Certainly some good may come from the latest British note, which is the clearest statement we have had on the Ruhr position for the past six months, and one has to admit that the note is an educational one from the beginning to the end. One can clearly see that the Government has made a determined effort to put matters clearly before the British public with a view of educating it to the facts of the case, and after a perusal of the document, so far as cabled, one must assume that so far the British Government has succeeded admirably in placing the whole of the facts regarding the present delicate position before the world. We can see a policy foreshadowed, he said, which, if carried out, will have a tendency to settle this vexed question, which is upsetting the whole world to-day. Unfortunately France still prefers to go her own way, and keeps talking of being within her rights in respect of the Ruhr region, but he thought that her present action would in the result be a disastrous one to Europe, and, if persisted in, prove inimical to France herself. It is sincerely to be hoped that the British note will be taken into careful consideration by the French Government and the answer given to it be couched in the same spirit in which it is tendered.

Information from Germany tells us unmistakably that the country is going from bad to worse, and it is just within the range of possibility that she might at any moment develop a movement towards Bolshevism or Communism or anything calculated to overthrow ordered government. Very little now, it would appear, is wanting to bring about a debacle in Germany and a state of affairs in Europe generally which has never before been witnessed, the great war and its consequences up to date notwithstanding. The community, therefore, is looking forward anxiously to the policy of the British Government being whole-heartedly endorsed by the whole of the British Empire.

It is much to be hoped that some satisfactory solution may be come to regarding the working of the E.R.P.M. and the Cinderella propositions, in respect of which an influential deputation waited on the Minister of Mines (Mr. Malan) during the week. Such a consummation would be of incalculable value to the country at the present juncture. The difficulties to be overcome in bringing about such a result would, as the Minister of Mines pointed out, undoubtedly be very great, but should with goodwill not be insurmountable.

Engineering shops are plodding steadily along with just sufficient work on hand to keep them going, but with hope of increased activity in the near future.

Iron and Steel.

There has been some trouble this week with the moulders' employees in the Denver Engineering Works, in sympathy with which the moulders of the African Iron and Steel Products, Ltd., were taken out. Notwithstanding this, however, the latter company reports that orders are well up to the average and deliveries are being made as usual. This contretemps is unfortunate in view of the fact that it is taking the local engineering firms all their time to make ends meet, and some of the works are, it is understood, continuing work more for the sake of keeping the men in employment than for profits. Prices on the whole show no appreciable change.

Mail Advices: Britain.

The trend of British exports of iron and steel has been continually upward since the beginning of 1923, the volume of iron and steel shipped abroad during May, 1923, reaching 424,509 tons. This is the largest amount exported during any one month since the world war. The totals for the

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[illegible] month of 1923 was: January, [illegible] tons; February, [illegible] tons; March, [illegible] tons; and April, [illegible] tons. Exports of these commodities decreased from 11[illegible] tons in April to [illegible] tons in May. The following table gives a comparison of the chief iron and steel products shipped to and from Britain during the months of April and May.

British Iron and Steel Imports and Exports in April and May, 1923.

Articles	Imports. April.	Imports. May.	Exports. April.	Exports. May.
	Tons.	Tons.	Tons.	Tons.
Pig iron and ferro-alloys	[illegible]	[illegible]	11,[illegible]	[illegible]
Tin plates	—	—	[illegible]	[illegible]
Galvanised sheets	—	—	[illegible]	[illegible]
Plates and sheets	[illegible]	[illegible]	[illegible]	[illegible]
Steel bars, rods, angles, etc.	[illegible]	[illegible]	27,134	33,722
Railway material other than rails	[illegible]	[illegible]	17,277	20,310
Rails	[illegible]	[illegible]	[illegible]	23,893
[illegible]	[illegible]	[illegible]	4,216	[illegible]
Wire	[illegible]	[illegible]	[illegible]	[illegible]
Wrought tubes, pipes and fittings	[illegible]	1,616	[illegible]	[illegible]
Structural steel	[illegible]	[illegible]	[illegible]	[illegible]
Hoops and strips	1,782	971	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	1,176
[illegible]	[illegible]	[illegible]	[illegible]	2,076
Wire manufactures not elsewhere specified	[illegible]	[illegible]	1,627	[illegible]
Ingots, blooms, billets, slabs, etc.	[illegible]	[illegible]	[illegible]	[illegible]
Nails, bolts, rivets and washers	[illegible]	[illegible]	[illegible]	1,933
[illegible]			1,799	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Iron and steel castings or forgings	[illegible]	[illegible]	18	[illegible]

Pig iron production in May was the largest since September, 1920, when [illegible] tons were manufactured. The output for May, 1923, amounted to [illegible] tons. Production of steel ingots and castings in May totalled 821,000 tons, also the largest figure since September, 1920, when [illegible] tons of steel ingots and castings were turned out. At the end of May there were 223 blast and 352 open-hearth furnaces in operation.

British Foreign Trade in May.

The British trade for the month of May shows an increase over April of £11,[illegible], or approximately 7 per cent. Total imports increased £3,[illegible] and exports increased £[illegible]4,000, while re-exports showed a slight decrease. Thus the excess of imports over exports and re-exports was practically cut in half as compared to April. Imports of food, drink and tobacco decreased by £1,850,000 and [illegible]. [illegible] raw materials were [illegible] by £2,2[illegible] and articles mainly manufactured increased £5,8[illegible], which is the greatest increase for the month.

British Foreign Trade for May, 1923, and a Comparison with April, 1923, and May, 1922.

Imports and exports.	May, 1923.	April, 1923.	May, 1922.
Total:			
Imports	[illegible]	£86,417,000	£88,[illegible]
Exports	[illegible]	[illegible]	[illegible]
Re-exports	[illegible]	12,[illegible]	[illegible]
Food, drink and tobacco:			
Imports	[illegible]	41,772,000	42,675,000
Exports	[illegible]	[illegible]	3,015,000
Re-exports	[illegible]	[illegible]92,000	2,152,000
Raw materials and articles mainly unmanufactured:			
Imports	[illegible]	[illegible]	27,358,000
Exports	[illegible]	11,747,000	[illegible]
Re-exports	[illegible]	[illegible]	4,548,000
Articles wholly or mainly manufactured:			
Imports	[illegible]	[illegible]	[illegible]
Exports	[illegible]	[illegible]	[illegible]
Re-exports	[illegible]	[illegible]	[illegible]
Animals (not for food):			
Imports	[illegible]	[illegible]	[illegible]
Exports	[illegible]	[illegible]	178,000
Re-exports	[illegible]	[illegible]	1,000
Parcel post:			
Imports	[illegible]	[illegible]	153,000
Exports	[illegible]	[illegible]6,000	[illegible]

As compared with May, 1922, total trade increased [illegible], or approximately [illegible] per cent. Total imports showed a slight increase in food, drink and tobacco, and in articles mainly manufactured, but these were nearly offset by a decrease of £1,617,000 in raw materials. Total exports increased by £13,510,000, or 23 per cent. Exports of raw materials increased by £5,248,000, or approximately 60 per cent. Articles mainly manufactured showed an increase of £7,728,000. Parcel-post imports showed an increase of 100 per cent. over the previous year.

Industry and Unemployment.

In the course of a brief chat with an important iron and steel magnate this week, he said his concern was doing all right and was indeed working up to capacity. But immediately it was known that a works was doing all right he was inundated by levies of unemployed seeking billets, which unfortunately his company were in no position to fill. The fact of the matter was, he said, the majority of workers, or so-called workers, in this country were really incompetent, they really did not want work; as a matter of fact the majority were weary sun-suckers. This important industrialist said the Rand's population is too big for our needs, in every department of commercial life we are devastated by competition, which, say, halved, might give us a competence. A point he stressed was that the majority of workers to-day are unskilled and not up to their jobs.

United States.

Imports of iron and steel into the United States during April amounted to only 77,909 long tons, as compared with 106,206 tons in March, 67,707 tons in February, and 120,080 tons in January. Pig iron receipts in April were 50 per cent. lower than in March and 57 per cent. below those for January, although they were slightly in excess of February deliveries. Scrap iron, bar iron, rails and splice bars, and tin plate show considerable increase from the March figures. The receipts of foreign iron and steel products by the United States in March and April, 1923, are shown in the following table:—

United States Imports of Iron and Steel.

Articles	March, 1923 Tons.	April, 1923. Tons.
Pig iron	72,344	36,371
Ferromanganese, manganese metal, and alloys	8,082	6,053
Ferrosilicon	949	1,169
Scrap	20,047	22,755
Steel ingots, blooms, billets, slabs, steel bars, etc.	1,150	1,263
Bar iron	119	1,237
Structural shapes	533	1,291
Rails and splice bars	838	2,918
Boiler and other plates	3	5
Sheets and saw plates	63	105
Tin plate	426	3,268
Round iron and steel wire	515	315
Wire rope and insulated wire, all kinds	151	14
Flat wire and strip steel	44	150
Wire rods	134	29
Tubular products	584	529
Nails and screws	122	118
Bolts, nuts, rivets, and washers	19	17
Castings and forgings	73	392
Total	106,206	77,909

The leading sources of American imports of foreign iron and steel in April, compared with March, were respectively: United Kingdom, 32,637 tons and 44,213 tons; Canada, 20,231 tons and 27,661 tons; Cuba, 9,545 tons and 4,496 tons; France, 7,145 tons and 16,784 tons in March; Germany 3,591 tons and 7,205 tons; Belgium, 1,906 and 1,734 tons; British India, 1,000 tons in April and no shipments in March; Sweden, 698 tons and 656 tons; and Panama, 622 tons and 1 ton.

Shipments received from the United Kingdom in April were composed of the following: Pig iron, 21,474 tons; ferromanganese and manganese alloys, 6,049 tons; scrap iron, 176 tons; steel ingots, blooms, billets, etc., 459; bar iron, 412; structural shapes, 157; boiler and other plates, iron and steel, 5; sheets and sawplates, 56; tin plate, 3,185; round iron and steel wire, 229; wire rope and insulated and covered wire, 12; flat wire and strip steel, 27; wire rods, 29; tubular products, 299; nails and screws, 2; and castings and forgings, 66 tons. This represents a considerable decline for the March receipts which were composed mainly of 34,828 tons of pig iron, 8,053 tons of ferro-manganese, 421 tons of tin plate, and 358 tons of round iron and steel wire.

Among the Canadian iron and steel products that came to the United States in April were 1,539 tons of pig iron, 16,159 tons of scrap, and 799 tons of rails and splice bars. The important March items were 10,455 tons of pig iron, 909 tons of ferrosilicon, and 15,511 tons of scrap.

The bulk of the French iron was of pig—6,789 tons in April and 16,566 tons in March. Other large shipments in April were: From Germany, 1,369 tons of pig iron, 303 tons of scrap, and 1,558 tons of rails and splice bars; from Belgium, 466 tons of bar iron, 782 tons of structural shapes and 496 tons of rails and splice bars; from British India, 1,000 tons of pig iron; and from Panama, 622 tons of scrap.

In addition to the tonnage above mentioned, there were imported 171,459 tons of iron ore, 11,071 tons of manganese ore and concentrates, compared with 166,626 tons of iron ore, 12,799 tons of manganese ore and concentrates. The sources of the April receipts were: Iron ore, 63,669 tons from Sweden, 38,800 tons from Cuba; 26,950 tons from Chile; 22,814 tons from Algeria and Tunis. The countries of origin for the March shipments were: Iron ore, 52,000 tons from Cuba, 41,535 tons from Sweden, 39,100 tons from Chile, 21,471 tons from Spain, 11,300 tons from Algeria and Tunis, 1,189 tons from Germany, and 31 tons from Canada; manganese ore and concentrates, 6,036 tons from British West Africa, 4,227 tons from Brazil, 2,505 tons from Russia in Europe, 21 tons from Germany, and 10 tons from the Netherlands.

In April, 1923, the United States imported from Latin American countries merchandise valued at $111,550,000—almost double the value of such imports in April, 1922—and in the ten months ending with April, 1923, goods valued at $818,931,000, an increase of 55 per cent. over those imported in the ten months ending with the previous April. The increasing mutual purchases of Latin America and the United States afford convincing proof of the soundness and permanency of the commercial relations between the great divisions of the American hemisphere.

Belgium.

The recovery of business in Belgium from the stagnation caused by the transportation strike, which began towards the end of April and lasted until June 1, has been hastened by lower exchange rates which render Belgian prices, especially on metallurgical products, more attractive for foreign buyers. As a result, some optimism now prevails regarding the immediate future.

Renewed Activity in Metals.

Until the end of May dulness and rapidly falling prices characterised the Belgian metal market; but during the first two weeks of June, a distinct recovery has occurred, particularly in finished steels, although pig iron and semi-finished products are still lagging somewhat. The majority of blast furnaces previously shut down on account of lack of coal are again operating, but not at full capacity. Prices are now advancing. There is no appreciable coal shortage, but shortage of freight cars is reported because of poor distribution resulting from the transportation strike.

Spain: Labour Unrest.

The most alarming feature of the Spanish situation is the widespread labour unrest, which is particularly severe at Barcelona, where shipping and many industries are almost paralysed by strikes and disturbances. The financial position of the Spanish Government is discouraging. The earnings of railways, electric works and some of the mining and metallurgical plants are increasing, but other industries are in difficulty through labour troubles. The latest trade figures show increases in both imports and exports, especially in imports, thus increasing the already unfavourable balance of trade. A serious decline has occurred in the value of the peseta within the past month. The total drop was nearly [illegible] per cent., and on June 14 the lowest quotation since December 17, 1921, was reached. It is expected that the Government will have recourse to a new loan in October for financing operations.

Railway Earnings in 1922.

The net earnings of the Madrid Zaragoza-Alicante Railway in 1922 amounted to 23,000,000 pesetas, against 20,500,000 pesetas in 1921, while earnings of the Norte Railway amounted to 22,000,000 pesetas against 21,000,000 pesetas; dividends of 22 per cent. and 24 per cent. respectively were paid on shares which have a par value of 500 pesetas. The Norte Railway has declared its intention to purchase a considerable amount of new equipment, including locomotives, tenders, passenger and freight cars, involving an expenditure of 40,000,000 pesetas. Spanish houses are obtaining most of the new contracts for locomotive construction.

Australia.

Danger of drought in Australia has been averted by the advent of sufficient rains.

Increased imports of motor vehicles, girders, beams, channels, and iron sheets and plates were recorded during June.

The Tariff Board has abolished the duty on all unworked steel plates to be used in construction of the Sydney Harbour Bridge, probably because of the magnitude of the undertaking. This will be one of the longest single-span bridges in the world—greater than Brooklyn Bridge, and only 200 feet shorter than Quebec Bridge. The estimated cost is £6,000,000, and the work of construction is expected to extend over 8½ years.

Roumania: Petroleum Situation.

Petroleum production for the month of April, 1923, was 128,000 metric tons. Production from January 1 to April

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30, 1923, was 509,420 metric tons, as against 450,656 metric tons for the corresponding period of 1922. Petroleum exports for April, 1923, were 12,000 metric tons, as against 15,000 metric tons during March.

Poland.

The advantage to Poland of the annexation of Polish Silesia, with its great coal, steel and zinc industries, is shown in the very marked increase of exports. While the value of imports has also increased, despite the fact that importation of coal is no longer necessary, the first quarter of 1923 showed a considerable excess of exports over imports. During March this excess was 46 per cent.

Netherlands: Electric Apparatus and Equipment.

The manufacturers of electrical machinery and equipment of all varieties in the Netherlands have reason to be satisfied with business done during the first quarter of the year as far as trade returns indicate. There was a marked increase in the imports of most lines of both machinery and equipment, while, on the other hand, the exports show an increase. The exports, including electric light bulbs, during the quarter of 1923 exceeded the imports by about 4,200,000 in value, while they showed an increase of more than one-fourth over the corresponding period of last year. Imports during the first quarter of this year decreased by about 12 per cent. compared with the same period of 1922.

Germany.

Of 78 factories manufacturing electro-technical wares and employing 200,000 workmen, 14 per cent. were doing considerably less than the normal amount of business, according to reports made to the Reichsarbeitsministerium (Ministry of Labour) early in April. In 76 per cent. of the factories business was average, and in 10 per cent. it was reported to be good.

The decrease in orders experienced by the industry in March appears to have been due to uncertainty concerning future price developments. Dealers were reluctant to place any considerable amount of business with the manufacturers and covered only their immediate needs.

Second-hand Machinery.

There appears to be, said a prominent dealer this week, no animation in the second-hand machinery market, although there is a little doing, but mostly owing to industrial and outside orders. The mines, he said, do not appear to be buying with a general spirit, and will only purchase in small quantities for actual requirements. But, as stated previously, any parts of machinery that require replenishing often they will not despise, but purchase when the opportunity is good. Second-hand steel plates are very scarce, and with the fluctuating market in new plates very few orders are coming in just now. There is very little construction going on just now, and there appears to be a very big stock of new plates in town, and prices have dropped a good deal during the past week or so. Second-hand bar iron, flat and round, is an unknown quantity; there is nothing going at present. There have been inquiries for small boilers and engines, but, as mentioned some time ago, these are very scarce. Where electricity can be installed, motors are purchased, and as second-hand are very scarce the mines are compelled to purchase new to suit their requirements. Generally there does not appear to be an animated market, and dealers, in common with others, are complaining of the bad times. What with the political state of the country with the Nationalist predominance and overtaxation of the mines engineered by this party, with the holding back of capital by overseas States, Dominions and the United Kingdom, the future is not very rosy for South Africa, and it causes the general second-hand dealer and speculative element a shyness to invest capital.

Here we have the finest country in the world, not only in minerals but in agriculture and climate and all one can reasonably want. The minerals are still in the earth waiting to be tapped and business for everybody, particularly machinery merchants, and yet we cannot get the money through the opposition of the Nationalist predominance that runs the country.

Agricultural Implements.

A partner of a leading importing firm of agricultural implements this week said the farmers are now beginning to get money for their produce, and he was looking forward to quite a good time during the next few months. Next month he anticipated farmers would begin to buy ploughs and spray pumps. Ordinary irrigation work was progressing satisfactorily. On the whole, this merchant said, his firm had no right to complain of current and prospective business.

Electrical Notes.

Contrary to expectations formed last week, things have not been too good this week; business has sagged off somewhat, the principal reasons for which have been the slackening off in building operations and the tightness of money.

Timber and Building Materials.

Business in the timber trade is presently quite good; stocks, with the exception of the smaller sizes of scantlings, which are very firm at 10½d., are nearly normal. Shipments of timber are arriving at our ports in fair quantity.

The building trade, although fairly active, has not assumed the activity which was expected about this time. Builders and contractors are, however, looking forward to big things very shortly. Prices of building materials, with the exception of scantlings, remain unchanged. Corrugated iron, as previously mentioned, is likely to go lower shortly.

Second-hand Iron and Timber Yards.

No improvement has to be reported in these; the fact is, as stated previously, that second-hand stocks are extremely scarce, and, although inquiries are good, dealers are being unable to supply other than in small quantities. Prices are nominally about 5d. to 6d. for iron and 6d. to 8d. for timber. A prominent dealer said this week that prices were inclined to go lower.

S.A. Reserve Bank.

Ratio of cash reserves to liabilities to the public, according to bank statement, August 11, 67·4 per cent.

Latest Metal Quotations.

London, August 13. Standard copper, £64 cash, £64 15s. three months; electrolytic copper, £69 15s. sellers, £70 5s. buyers; copper bars, £70 5s.; standard tin, £183 7s. 6d. cash, £183 12s. 6d. three months; foreign lead, £24 2s. 6d. prompt, £24 forward; quicksilver, £9 5s. per bottle; bar silver, 31⅛d.; bar gold, 90s. 2d. per oz.

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A New Far West Rand Discovery—Oil in Angola—The Mines and Research—Transvaal's Coal Trade Improving.

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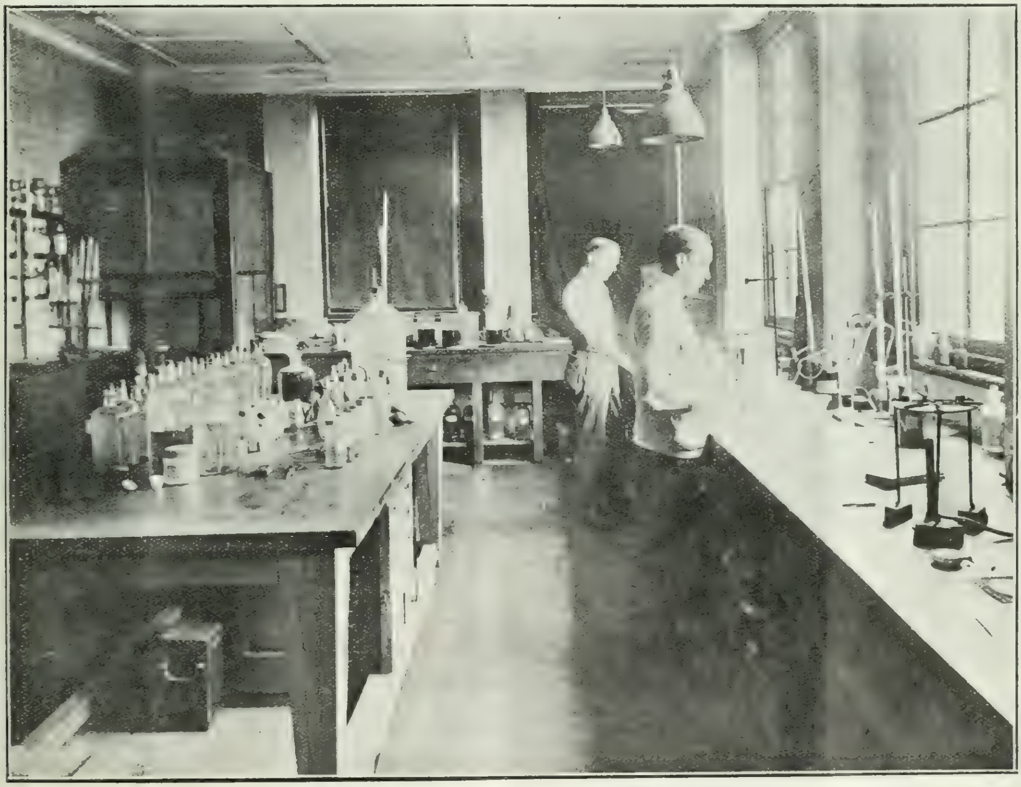
Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, AUGUST 25, 1923 No. 1665

An Aspect of Research Work on the Rand.



THE RAND MINES CENTRAL LABORATORY ON THE FERREIRA DEEP.

Here materials of many kinds used on the mines are tested. It is often suggested that the mines buy with more regard to price than quality, but the above provides a concrete rejoinder. The important paper on the subject by the President of the C.M. and M. Society is printed in this issue.

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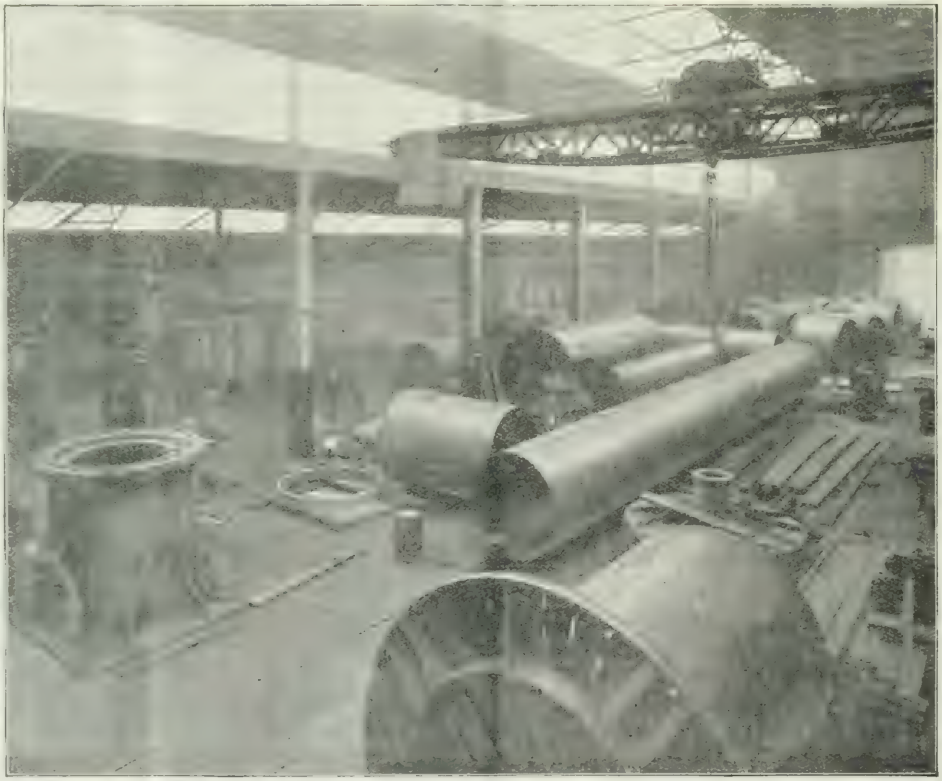

View of Work in Progress.

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Auriferous Bankets in the Wolmaransstad District.

AN INTERESTING DISCOVERY THAT MERITS INVESTIGATION—A FAR, FAR WEST EXTENSION OF THE WITWATERSRAND?—SEVERAL FARMS TAKEN UP AND INTERESTING DEVELOPMENTS FORESHADOWED—HOW ATTENTION WAS DIRECTED TO THE NEW AREA—THE SHED GOLD OF THE LICHTENBURG DIAMONDIFEROUS ALLUVIALS—FORMATION CONSISTENT OVER 30 OR 40 MILES—PROSPECTING ACTIVITIES OF THE POST-ANGLO-BOER WAR PERIOD RECALLED.

The Far Western Witwatersrand; or to be more accurate, that portion of the Western Transvaal which is known to contain the Witwatersrand beds, has not witnessed any period of activity for some years now. It is true that the prospecting and subsequent proclamation of certain farms in the extreme western portion of the Rustenburg district during the past twelve months has resulted in considerable interest being focussed on that area, and the resuscitation of the Afrikander mine under the aegis of a syndicate of Rand mine managers has also been noteworthy. Generally speaking, however, there has been little activity in the Western Transvaal as a whole for a long time past, and it is therefore particularly interesting to learn that a discovery which may be of much importance to the whole country has recently been made in the Wolmaransstad district.

Activity after the Boer War.

It may be recalled that shortly after the conclusion of the Boer War the country lying to the west of the Randfontein-Potchefstroom-Klerksdorp line came into prominence chiefly on account of the spectacular assay values secured by boring in the properties of the Western Rand Estates and by the pronouncements of geologists of repute, such as Dr. G. A. F. Molengraaff and the late Dr. [illegible], regarding the extension of the Witwatersrand formation westwards towards Klerksdorp and indeed beyond. Interest in this line of country was intensified by reason of the reporting of good returns and assays from the Afrikander, Klerksdorp Gold and Diamond Mine, West Bonanza, Niekerk, [illegible], New Gold Venture and other propositions in this area. For some months there was something in the nature of a "boomlet" in the Klerksdorp, Wolmaransstad and Schweizer Reneke districts and further afield of those towns. Options were secured over a very large tract of country extending from almost the southern edge of Randfontein right on to the vicinity of Wolmaransstad and the Bechuanaland Border, and a considerable amount of prospecting work was conducted. But this boomlet, like many other phases of temporary activity in the outlying regions of the Transvaal, was not long lived, and what might perhaps by a fairly vivid stretch of geographical and geological imagination be termed the "Far Western Witwatersrand" soon fell into discredit. It is interesting, however, to recall that gold was actually located not far from this new field about 20 years ago. A Mr. Bantjes sank a shaft on a banket formation carrying gold which was found on the farm Holfontein to the north of the area which has now been taken up. But on account of the death of Sir Edward Hulse, chairman of the company interested, shortly after this work was commenced prospecting operations came to a standstill.

How the Discovery was Made.

Within the past few months interest in this area has been revived to a small extent, and it appears that a discovery which may be of considerable importance has been made. The resuscitation of interest is in large measure due to a rather interesting incident. It appears that Mr. Hunter MacLea, Secretary of the Rand Pioneers, some time ago sought permission from the J.C.I. Company to obtain some samples of South Reef from the farm Langlaagte, where this formation was first found on the Rand. The specimens were desired by the Rand Pioneers and the request was granted. In the course of procuring these specimens Mr. MacLea came in contact with a man who said he knew where an exactly similar formation to that existing on Langlaagte was to be found in the Western Transvaal. Mr. F. J. [illegible] and Mr. Hunter MacLea thereupon organised an expedition to the area in question. They located an extensive and apparently promising line of conglomerate formation and secured options over several farms. The conglomerate formation has been traced for several miles of country lying to the west and north of the town of Wolmaransstad and in the vicinity of the Bamboes Spruit, which runs into the Vaal River. The sequence of strata is said to be consistent over a very considerable distance and to duplicate the stratigraphical succession observable on the Central Witwatersrand.

The Reefs and Their Values.

A representative of the "S.A. Mining and Engineering Journal," who during the week inspected samples of the strata which have been brought to Johannesburg, was favourably impressed with the appearance of the beds and their relation to the surrounding formation as exhibited on the map compiled by Dr. Molengraaff, and whilst it is entirely impossible to judge their possible economic value by means of casual inspection, or to assign to them any very exact horizon, it would appear probable that the sandstones, red bars, laminated slates and conglomerates are referable to the Witwatersrand series. More important and interesting is the question of values, and although in the absence of any systematic sampling it is impossible to say anything very definite on this point, it would seem indisputable that at some places along this line of formation the presence of gold in payable quantities has been determined. According to the information supplied to our representative an assay of 6 ounces per ton was obtained from a section of the reef encountered in a borehole for water which recently has been sunk on this line of formation. Specimens of the conglomerates brought to Johannesburg have been submitted to a local mining engineer, and on assay one of these "samples" yielded 20 dwts. per ton and another sample gave 8 dwts. per ton. At some points the gold values are apparently negligible, and it is obvious that a good deal more work will have to be done before anything approximating to even a rough estimate of the economic value of these conglomerate beds can be attempted.

Farms Under Option.

The outlook is, however, deemed to be an encouraging one, so much so that several farms and portions of farms are now held under option with a view to further exploiting the conglomerate formation in the future. The farms under option at present are Lucaskraal No. 16, Waagkraal No. 8, Strydpoort No. 6, and Uitval and [illegible]. The presence of gold-bearing conglomerate on the farm [illegible] No. 150, to the south of the farms mentioned above, has also been detected. The conglomerate beds are stated to have a line of strike approximating to north and south and to be continuous for 30 or 40 miles.

Further Results Awaited.

Whether the line of banket formation here referred to possesses any great economic significance or not remains to be seen, but the location of what is apparently a hitherto unproven and extensive area of auriferous conglomerates situated at a distance of 2[illegible] miles [illegible] from the Witwatersrand proper seems at any rate to be a matter which calls for further investigation. It is an interesting fact in connection with this new potential goldfield that small nuggets of gold are frequently found in association with the diamondiferous alluvials which are being worked in the Lichtenburg-Wolmaransstad districts, and in some quarters the view is held that this gold and possibly the diamondiferous content is shed from the banket beds, [illegible] is here made. Associated with the banket reefs are quartzite reefs, and the topographical conditions as well as the geological features are stated to closely resemble those noticeable on the Witwatersrand.

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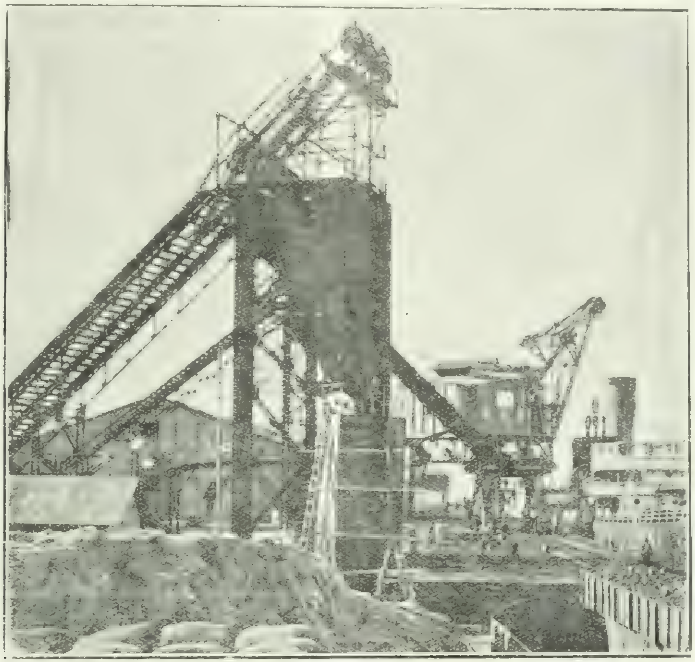
Transvaal's Coal Trade.

SUBSTANTIAL ADVANCE IN PRODUCTION—MORE ORDERS FROM DELAGOA—NEW PLANT FOR THE PORT—OUTPUTS RESTRICTED THROUGH TRUCK AND NATIVE LABOUR SHORTAGE.

It is understood that after a lengthy period of depression, resulting in the main from the disorganisation of work consequent on last year's strike, a substantial demand for Transvaal coal is developing at Delagoa Bay, and that the collieries of the Witbank district have some big orders to comply with. Shortage of trucks and of native labour are two factors which are hampering the managements in fulfilling contracts, but it is at least encouraging to learn that the Transvaal's coal trade is again looking up, and it is hoped that this improvement will continue.



The New Coal Loading Appliances at Delagoa Bay.

Interviewed recently, the Director of Railways (Engineer Andrade) stated that he had 14 large locomotives with a haulage power of 1,000 tons each; that he could haul from the border, if necessary, 25,000 tons per day; that he had accommodation in the wharf area for coal trucks carrying 30,000 tons; that his combined coal-loading appliances could handle 1,000 tons per hour, and that with large buckets and hand labour he was able to deal with 1,500 tons in a day of eight hours, which could be increased by working either two or three shifts; that he had four shunting locomotives reserved for shunting wagons at the two appliances; that there were now in course of erection eight cranes, one with a capacity of ten tons and seven with a capacity of five tons each; that he had just ordered three electrically-driven shunting locomotives for exclusive use on the wharves; three passenger locomotives and five locomotives each able to haul 1,000 tons; and that he had the authority when necessary to order 100 additional bogies.

The following figures show the tonnages sold of Transvaal collieries since the beginning of this year:

	Tons.	Value at Pithead.
January ...	523,293	£138,108
February ...	457,244	119,084
March ...	497,562	130,143
April ...	537,109	142,799
May ...	600,510	160,215
June	589,652	154,653

As to labour, it is worth while noting that for all coal mines and by-products works of the Union the number of white employees has declined from 1,709 in September of last year to 1,656 in June, whilst native labourers have fallen from 35,094 to 32,316 during the same period.

WEST END DIAMONDS, LIMITED.

The report of operations for quarter ended 30th June, 1923, is as follows: Loads washed (including 17,117 loads of overburden), 72,351; yield (metric carats), 5,430; value, £15,272; estimated profit, £1,784. The decrease in profit, compared to the previous quarter, is due to the lower yield during the months of April and May caused by the unavoidable inclusion of a large quantity of overburden in the ground washed. The arrangements made to deal with the overburden separately have been in force since the end of May, and June showed a much improved yield, which is being fully maintained. Development work on the 120ft. level is completed. The plant continues to run efficiently and the average number of loads treated daily is steadily increasing.

Practical Research Work on Rand Mines.

REVIEW OF THE FUNCTIONS OF THE CHEMICAL AND METALLURGICAL LABORATORY POINTS.

From Address of the new President of the C.M. & M. Society.

A presidential address is always regarded as a privileged document, in that it is not open to discussion, so that the author has little fear of [illegible] other members. In consequence I have chosen a subject which I do not think can be regarded as highly controversial, that is, the function of the laboratory which is, or should be, attached to every mining group. This attachment unfortunately is not always the case, and it often happens that the laboratory is regarded as an unnecessary appendage and expense. At the present time certain supplies, notably coal and lime, are bought on a unit basis found by estimation in the laboratory, and these values have to be determined to satisfy contracts, but beyond that little else is done. This work is, in many cases, carried out by outside analysts, who have no direct connection with the controlling houses and who usually carry out these necessary tests at a contract price. I remember once seeing the utility of a company's laboratory questioned in the following way: "If the work is worth doing, let the mines pay for it; if it is not worth doing, why do it?" Can anyone with even a small experience of the economies to be effected by the systematic testing of stores and other materials understand why the second alternative should be put forward.

Recent Developments.

This subject was reviewed in 1907 by a paper by Mr McArthur Johnston on "The Laboratory, its Economic Value," and the paper principally dealt with the work that was then done in the Consolidated Gold Fields Laboratory, and the equipment that institution then possessed. Much has happened since 1907, and I propose to treat the subject in a more general manner. In this way perhaps I shall better be able to deal with the developments which have taken place in the group laboratory system as typified by the two laboratories in which I have had personal experience, those of the Consolidated Gold Fields and Rand Mines, Limited. First of all, with your permission, I should like to go back a good many years to the period just after the South African War when I first came to the Witwatersrand. To anyone coming from the Old Country with any experience of the running of a factory, where economy had to be rigidly enforced to meet competition, the haphazard method of purchasing supplies and the waste of material at that time on all sides was appalling. The only crime that was really serious was to lose gold and the only work that apparently was carried out to check returns was that of the assay office. I am speaking, of course, of work which might be classed as chemical, the checking undertaken by the clerical, underground and engineering staffs I do not feel competent to discuss.

The Assay Office.

The chief assayer's chief anxiety was assaying his bullion. He had no necessity for CO_2 estimation, no dust determinations, and above all, he had no examination for a [illegible] or Phthisis Board to pass. The mine assay office might occasionally have a special ore or lime analysed. This was only, as a rule, carried out to satisfy the curiosity of the manager or engineer, and little use was made of the results so obtained. In many cases, I am afraid, there was no one in the assay office capable of carrying out an analytical determination; all that was required was a knowledge of the art of "pot slinging." These haphazard methods have to a great extent entirely changed; some may still have leanings towards the old days when working costs were not such a bugbear to the manager and things in general were much easier, but I think all those who have in any way a scientific turn of mind will agree that all resources of science should be used to effect economies, a much better and less troublesome method than reducing wages. In 1905 the author forsook the mine assay office, never to return to it, much to his own satisfaction, as the art of wielding the crucible and cupel tongs, whilst excellent and very necessary in its way, is not conducive to inspire one with a love of the daily round and common task. At that time the Consolidated Gold Fields laboratory had only been in existence a few months, but a nucleus had been formed round which was built a system of testing supplies and carrying out experimental work which was the means of effecting many valuable economies. The institution possessed, among other equipment, a Mahler bomb calorimeter, at that time, I think, the only one in use in South Africa. Limes were also being tested, as the sugar method—still in use—had then recently been the subject of a paper read before this society by the chemist then in charge, Mr G. W. Williams. The coals tested were few in number, about 12 to 20 per month, and they were all done for volatile matter, fixed carbon and ash. This is rather a difference from the contract system now in use, where all the coal is bought on calorific value and the Mahler bomb is the corner-stone of most of the analytical chemists practising in Johannesburg. In sketching the development of the group laboratory I do not intend dealing in detail with the work that is usually associated with analytical practice, but rather with certain broad lines of economy which in succession came under the control of the laboratory and resulted in marked saving and improvements being effected. These undertakings usually involved a considerable amount of outside work quite apart from samples that might be submitted in the usual way for analysis.

Boiler Houses on the Mines.

The first undertaking was in connection with the boiler houses on the mines. At that time the boiler house was a much more important factor than now, where so much of the power is electrical. Flue gases were taken in hand and tested systematically by means of perforated pipes placed across the flue in different positions to determine the best methods of firing and regulation of the air supply. One type of boiler was tested against another, and as a result automatic CO_2 recorders were placed in all the boiler houses under the control of the group. These instruments are excellent if properly looked after, and to ensure this they were checked regularly every week by a member of the laboratory staff who compared the readings on the chart with the results of parallel samples taken with the Orsat apparatus. If the recorder was reading incorrectly, it was adjusted to give true results. The question of the boiler feed water was also thoroughly investigated, and the problem of properly softening the water supply was in time put on a satisfactory and systematic footing. This was a big task, as at that time the supply of water to the boiler plants was irregular and great variations in the nature of the raw water had to be contended with. Even mine water had to be employed, as there was often a shortage of Rand Water Board supply. Purifiers of various types were installed and these, like the CO_2 recorders, were regularly visited by one of the laboratory staff whose duty it was to check the inlet and outlet of the purifier, the various hot wells and actual water fed to the boiler, and meter readings, and see that a suitable temperature (about 100°F.) was maintained in the purifier so that precipitation should be as complete as possible. This system was the means of tremendous saving in coal, labour and boiler tubes, as hard scale was practically eliminated, and the mine engineers and boiler-house foremen have often borne eloquent testimony to the improvement in the condition of the boilers and efficiency of the plant brought about by this supervision. One important factor in the system was that if a condenser leaked it was quickly detected and repaired, as if a leak is neglected considerable damage can be done by scaling of the boiler tubes. A monthly chart was kept and the results were entered after each visit, the amount of lime and soda required per day being specified.

The Checking of Stores.

The next activity of the laboratory was the systematic checking of stores. Mr. McArthur Johnston's paper, before mentioned, referred to the necessity for this, but in 1907 the system was in its infancy. It was realised that it was no use waiting for samples to be sent in; this was never done systematically, and the results were not of great value. After all, what is the use of buying stores on specification, calling for tenders and analysing the samples submitted by the firms tendering if no steps are taken to see that the goods actually supplied comply with the requirements. This, after much trouble, was recognised and a system was adopted whereby the laboratory was empowered to send a representative to the mine stores and compounds and sample the stores from bulk. Many faulty consignments were detected. In one case the soft soap supplied contained 20 per cent. more water than the guarantee, in another the sugar supplied was of a distinctly inferior quality. (I may mention that the successful firm obtained the contract on account of the superiority of the original sample.) A standard was set for calcium carbide to ensure that it evolved a certain volume of acetylene per lb. (4·8 cubic feet measured at 600°F. and 760 m.m., including 5 per cent. allowance on actual determination). This standard was adhered to, a most necessary proceeding, as previously many consignments had fallen far below this requirement. Finally the suppliers knew that their stores were being checked, and if any inferior goods were on the market they were sent, I am certain, to other mines than those of the group concerned. The need of this was stated by the writer in replying to criticism on a paper on food supplied to compounds where others were exhorted to go and do likewise in the matter of testing supplies. This matter of checking stores could be greatly enlarged on, but time does not permit. It is one of the most important functions of the group laboratory, and its advantages are apparent.

Coal Sampling.

After the sampling and checking of stores had been established, the question of coal sampling was gone into, and this also finally passed completely into the hands of the laboratory. By this means a uniform method of coal sampling was ensured and one that was in accordance with the contract with the Coal Owners' Association. The sampling of the ash from the boiler houses was also taken in hand by the member of the staff who sampled the coal, and this vastly improved the combustion obtained and reduced waste on account of less unburnt or partially burnt coal being thrown on the dump. A poor ash usually goes from 60 to 70 per cent., true ash and a good one from 80 to 90 per cent. I must admit that I always had a feeling that this ash sample lent itself peculiarly to the gentle art of sophistication. Many times the sampler has remarked to me that he reckoned certain firemen were doing him down. One fireman was detected, and he promptly told the sampler that he was no gentleman. (I may mention that a bonus for the best results was at stake on this occasion.)

The Dust Question.

This society has had a good many contributions lately on the dust question and a considerable amount of the pioneer work was carried out in the Consolidated Gold Fields laboratory. Before the sugar tube was established for the garvimetric determination, different methods of collecting the dust were experimented with at the laboratory. At first the sample was taken by aspirating with water, a slow method, and the operator had often to dam up the water at the side of a drive in order to fill his aspirator. At that time a few litres of air would give an appreciable weight of dust—100 m.m. per cubic meter was not uncommon—which goes to show what a tremendous improvement has taken place in the condition of the air underground. A Roots blower fitted with a meter was tried—a frightfully clumsy apparatus—and finally the double action suction pump was brought into use. The first pump was made in the Simmer Deep fitting shop, and the first gauze funnel, used for eliminating coarse dust by filtration, was made in Germiston and put in use by the laboratory. These types of pumps and funnels, with improvements, are still in use. The methods then used were perhaps primitive, but they laid the foundation of the systematic work and research which has since been carried out on the miners' phthisis problem and the introduction of all the refinements, including the Kotzé and other konimeters, which have been thoroughly discussed lately in this society. In connection with ventilation the mine air in winzes, rises, back stopes, etc., was sampled every three months, as then required by the regulations, and the CO_2 estimated. This was also done by the laboratory, and the estimations were actually carried out at the stations underground, considerable time being saved by this method. When monthly samples were required, the sampling was relegated to the mine officials.

Mine Water.

The next subject I shall mention is the neutralisation of mine waters. If only economical neutralisation is required then the problem consists in putting in enough cheap alkali, either lime or carbonate of lime, but where there is a danger of super-saturation of the water with calcium sulphate and consequent scaling and stoppage of the pipes underground, the problem becomes much more complicated. This is one of the instances where the services of a competent laboratory staff are urgently required, and the pity of it is that often stoppage of the pipes has become far advanced before the help of the chemist is requisitioned. It is on the mines of the Central Rand that the danger of the pipes becoming choked with deposited calcium sulphate is most acute, and the question to be decided is how far can neutralisation with lime be carried without interfering with the flow of water for sprays, etc. Where this scaling of pipes happens, two courses are open: dilution with water from another source or treatment with sodium carbonate. The second of these is too expensive to carry out on any very extensive scale, and the first presents pumping problems even if a supply of suitable water for dilution is available. In the Rand Mines group a system of supervision has been evolved which has given satisfaction and has resulted in the prevention of scale and also corrosion. The mine is visited by one or more members of the laboratory staff, plans of the water system are examined, and visits paid underground to inspect the more important points of the water service. A diagramatic sketch is made of the underground water service, and various vital points, about five or six as a rule, are selected for regular weekly sampling. The results are entered up on a chart so that the condition of the water can be seen quickly and any marked variation noticed and rectified. The feeding of the lime used for neutralisation is one of the most important points in this water treatment scheme, and an automatic feed, which will take the lime supply for 24 hours, is installed wherever possible, as this has been found to be the only satisfactory method. It is wonderful what results can be obtained and scaling and corrosion be prevented by systematic work, and in many cases where good results at first sight appeared to be impossible, owing to the expense of soda treatment and lack of a supply of reasonable water for dilution purposes, some way has been found out of the difficulty and the condition of the water rendered harmless.

Underground Timber.

Another problem which has been undertaken recently is the treatment of timber for use underground so as to prevent the growth of fungus and consequent rotting of the timber. Creosote at one time was used extensively for this purpose, but more recently the zinc sulphate solution from the acid treatment tanks has been employed. Extensive tests have been carried out to determine the amount of zinc sulphate absorbed and the depth of penetration of the solution into the timber where different types of wood and different methods of treatment have been employed. This is an undertaking where supervision by the chemist is essential, and is another example of the benefit of systematic control of such processes by the laboratory.

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Drill Steel.

The quality of the drill steel supplied at one time showed big variations in composition. The amount of this material used is enormous, and it is apparent that a standard should be set and the suppliers kept rigidly to it. By this means a uniform grade of material can be secured, and this can only be accomplished by constant analysis and testing.

This uniformity has to a great extent been accomplished in the last few years and a more satisfactory and more economical material is now in use at a lower initial price.

Metallurgical Work.

So far the writer has not dealt with metallurgical work, which is usually considered as the principal function of the mining group laboratory. Problems in this department are continually cropping up. Something goes wrong with the extraction at a particular mine resulting in high residues or abnormal solutions, and the services of the laboratory are requisitioned to locate the trouble. This has happened in many instances, and as a rule the source of the trouble has been quickly found where, without a properly equipped laboratory, considerable time might elapse and loss occur before matters were put straight. The recent change over from amalgamation to corduroy concentration has brought many problems before the chemist and metallurgist. So many new constituents of the reef have been found which before went with the bulk of the sand into the cyanide tanks and were therefore not noticed particularly. Now that they have been separated they have to be considered in detail. There is also the problem as to whether different concentrate materials should be passed into the bulk of the circuit or treated as a separate unit. The problem of whether contamination with amalgam interferes with the solubility of the gold in cyanide and the question of all sliming and treatment of the ore entirely by cyanide has to be experimented with before the installation of such a process could even be considered. De-aeration of solutions with consequent saving of zinc and avoiding white precipitate and the preparation of oxygen standards to check the working of the plants are also part of the routine laboratory work. I need only mention in passing the recovery of osmiridium. We have had papers on this subject and it is obviously highly technical work. I do not think it is necessary to go into detail regarding the metallurgical work which can be undertaken, as in our society, which caters largely for metallurgical problems, the utility of the laboratory in this respect requires no enlarging upon by me.

Defence of the Laboratory.

Let us now consider the position of the laboratory with reference to the directors of the group who, after all, are the final court of appeal. Usually the laboratory chemist has to put up a much stronger case than should be necessary to justify his existence. Let it be remembered that, although he may save thousands of pounds by, we shall say, supervision of boiler plants, prevention of scaling of underground pipes and consequent stoppage of machines, supervision of the quality of stores and proper treatment of underground timber, there is no direct charge shown in the laboratory costs, and the balance sheet gives no credit to the chemist for these branches of his work. Let us suppose that if for all economies effected a proportion was justly put to the credit of the laboratory, could not we show a fine balance sheet? But would not there be an outcry in other quarters as to why the laboratory should have even a small percentage of the saving? When, I ask, will it be acknowledged that a laboratory is not a money-making concern, but primarily a money-saving one? I have often been asked why it is that the laboratory which does work for all departments should be attached to one particular department, the metallurgical. This question to anyone who has had much experience in this branch of chemical work is easily answered. At present a laboratory which had to stand on its own in a mining company would not have much chance; it must have a recognised department to sponsor it, and the Metallurgical Department is the natural sponsor. The chemist often regards the consulting metallurgist as a court of appeal, especially in the case of the urgent sample, the bane of every chemist. This is what happens:—Department X sends in a sample of mineral for analysis. It is very urgent, so urgent that if it is not finished in two or three days something serious will happen, in fact the whole Union stands a chance of going bankrupt. Then Department Y has a sample of grease for examination. If the results are not out during the week the whole Rand will close down. Department Z has quite a different type of sample. The results must be in by Wednesday morning for the mail; if not, something will surely go wrong with the mail boat, and so on. The least calamity quoted is the probable hanging up of a mill for a few hours; this probably comes from the Metallurgical Department. If the chemist has had any early piety he lifts up his voice and says, "Out of the depths I cry unto thee, oh metallurgist!" Please settle whose work shall be done first, because I have only two hands and so has each of my staff. Thus the responsibility is taken off the chemist's shoulders and the metallurgist is thrice blessed. Now let me deal with the costing of the laboratory. How is the work to be charged? The biggest handicap a company's chemist can cope with is the direct charge, because it at once cripples the utility of his department. Let me give an instance. A little while ago an underground dust sampler telephoned and asked to have the service water tested. His first query was "Will there be a charge?" The reply was "Yes!" and he said, "I do not think the manager will run to it." This is only one case, and others, many I am afraid, could be quoted. Why cannot the cost of the laboratory be estimated? Let it be regarded as an investment, and I am sure an excellent one, and let the mines contribute on a tonnage rate basis and send in what work they like. Then and only then will full advantage be taken of the services of the chemist, and these services will be appreciated and sought after, but as long as the direct charge hangs over a mine official like the sword of Damocles he will fight shy of the expense. By all means put a charge on work from subsidiary companies and head office departments, not regular contributions, but let the mines have unfettered use of the laboratory and full advantage of the advice available. One thing I would like to emphasise is that it is no function of the group laboratory to compete with the analyst in private practice. If direct charges have to be made, let them be on a scale commensurate with what a consulting chemist would charge. The cutting of fees seems to me to be unprofessional and is comparable to the drapers' advertisements of "Sale now on: Prices cut to ribbons." The author was given a book recently to peruse on Laboratory Organisation, by Seymour Pile and Reginald Johnston. This is an excellent book in many ways, but I think too academic. At our dinner Sir William Dalrymple spoke about the white man in South Africa requiring to bend his back. I recommend our members to read this book and see what the authors' idea of the functions of a chief chemist and his "lieutenant" is. I am afraid our mining companies are not so highly idealistic, and it is refreshing to think that if the views expressed are common in the Old Country, then here is one instance where the white man bends his back more in South Africa than at Home, and is expected to do his whack and not act as a sort of super supervisor both of work and outside pursuits. The authors of the book recommend training their own staff and taking on assistants at the age of from eighteen to twenty. If this is to be the universal custom, then what is to become of our chemical graduates? Are they to be left out in the cold, and is the University training of chemists, as far as commercial and technical work is concerned, to be a dead letter? We in Johannesburg make a practice of giving University students a vacation course and give them a small remuneration for the time spent in the laboratory. Surely this is a more laudable method than that recommended in the book, as I am sure you are all agreed that mining and industrial concerns should encourage our University graduates and undergraduates.

Mr W. Wolstenholme, managing director of the Hume Pipe (S.A.) Company, Ltd., left for England last week.

Wealth and Commerce Follow Oil Discoveries.

ANGOLA LIKENED TO MEXICO—PICTURE OF WHAT DEVELOPMENT WOULD MEAN TO TERRITORY DRAWN FROM COMPARISON OF CONDITIONS.

Everywhere on earth where oil indications are visible more or less prospecting for oil is now being done. The great economic problem of our time is the securing of great oilfields to meet the great petroleum demands of the immediate future. The country which possesses oil-bearing territories or oil-bearing colonies promises to reap rich rewards and become the possessor of great industries, commerce and wealth. The estimated value of the foreign holdings and investments in Mexican developed oilfields exceeds £100,000,000. These figures, it is said, will be greatly increased when the political situation becomes stabilised so as to enable foreign capitalists to increase their investments

Indications of Oil Long Known in Angola.

One of the first countries to attract the attention of oil prospectors after the war was the Portuguese colony of Angola. "Not only have oil indications long been known in many parts of the coastal districts," writes Dr. A. S. Brown, in the course of an interesting article in an American contemporary, "but the geological conditions of the coast appealed to geologists as ideal for oil-bearing strata." This great country is endowed by Nature with varied natural resources. Statistics, however, indicate that it is not as prosperous as it should be. There is an area of 480,000 square miles of land, a population of 4,000,000, and an annual deficit of about 2,000,000 escudos. More capital and a bigger European population are necessary to make Angola flourish like a new Brazil. The proximity of the Katanga mining fields and the success of its own diamond mines may greatly improve the position of the Colony in the near future. But nothing could give a greater impulse to prosperity than the striking of great oil gushers by one of the British or American oil companies. These, according to Dr. Brown, are both strong concerns and anxious to expedite developments. Moreover, they are operating on proved successful lines. "At any time," adds the same writer, "we may learn of the discovery of large quantities of commercial oil."

Angola and Mexico.

Dr. Brown goes on to say: "Conditions for the development of immense petroleum fields in Angola are quite as fine as they were in Mexico before American oil men prospected and developed the Mexican oil fields. What oil has done for Mexico, Russia and the United States, it will some day do for the Portuguese colony of Angola. Money, enterprise and technical skill are all that are necessary to make the coastal areas of Angola flow with petroleum. Proof of the oil occurring there over large areas has been given. Let us see, then, what oil did for Mexico, which resembles Angola in many respects, so as to forecast what it will do when the Portuguese fields are opened so as to become world producers."

History.

The early Spanish visitors to Mexico saw many evidences of oil in the form of springs and pools. A later writer has said: "At Chapapote, the flow of petroleum makes its appearance about the circumference of the base of a hill which raises itself from the surrounding plain. These springs in large numbers appear in parallel lines, one above the other, according to the slope of the hill, almost encircling it with flowing wells of petroleum. The overflow from these springs has formed great lakes extending for a distance of a mile through a depression in the soil fifty feet in width, filled with viscous petroleum."

First Well Drilled.

The first record of any work being done on the Mexican fields appears to be that of a Mexican named Lopez, who secured a Government licence to drill near San Jose de las Rusias, Tamaulipas, in 1865. An American Consul named Hoyt reported on the value of these fields in 1868-9. The result of the publication of this report was the formation of the Compania Exploradora de Petroleo del Golfo Mexicano. This company did a little drilling, but it was not very energetic and lacked capital. A man named Autrey, afterwards well known through his promotion of Angostura Bitters, erected a small refinery at Papantla and sold the kerosene obtained in local markets between 1870 and 1875. Capt. George Glidden, in 1881, discovered 2,000 acres of oil land at Tuxpam and sold it to the Boston Mexican Company. A number of drills were put in; but this company eventually failed. Cecil Rhodes formed the Mexican Petroleum and Liquid Fuel Co., Ltd., in London, in 1900. This company carried out an effective development scheme and gave a great impetus to Mexican commerce. Like the Boston-Mexican Company, however, the British company finally failed to meet with success.

The Americans interested in Mexico closely followed the work done by the British, and many prospecting parties were sent to Mexico. E. L. Doheny, of Los Angeles, in 1900 set out to prospect for oil on the Hacienda El Tulillo, lying between the states of Tamaulipas, Vera Cruz and San Luis Potosi. Success attended his work, and after arranging with the Mexican Central R. R. Co. to use crude oil in its locomotives, and so make a local market for crude oil, the Mexican Petroleum Co. was promoted. This company has been extremely successful, and is now one of the leading American oil companies.

Another English company, the Oil Fields of Mexico, formed in 1903 by Sir Weetman Pearson, later called Lord Cowdray, began to develop oil in the Isthmus of Tehuantepec. This company was also successful, and in 1906 erected a large refinery at Minatilan. The success of these companies led to the promotion of many of the British and American oil companies and started oil prospecting all over Mexico. It also gave a strong impetus to commerce and the development of other natural resources throughout Mexico.

105,000 Barrel Gusher Discovered.

The Aguila Company, an English concern, drilled a great oil gusher at Potrero, near San Jeronimo and Huasteca, in December, 1910. Oil was not expected to be struck in such quantities and the well had to be let run wild, which it did until May, 1911, when the difficulties in controlling it were solved in a noteworthy manner. The oil was running at the rate of 105,000 barrels per day. A reservoir, hastily constructed to hold 3,000,000 barrels, was soon filled and then the overflow ran into the Tuxpam river and to the sea, where it was always a source of danger.

Ships could not enter the river on account of its bar, so large steel tanks were constructed at the mouth of the river connected with loading piers built in the sea near deep water by two eight-inch steel pipes, and with the reservoir at Potrero. Ships were now able to load the oil at sea, and it was only a question of providing enough ships and pumping capacity to ease the pressure on the main oil reservoir. This was soon done, and no further trouble developed. This method of shipping oil proved so valuable that it has since been widely followed where the ports are poor and the water is shallow.

Control in Hands of a Few Firms.

Mexican oil properties are owned or controlled by less than twenty American and British companies. They are held in large areas where competition is regulated. This has resulted in conserving great resources of oil. The potential capacity of these fields in Mexico is very great.

Let us hope this brief history of patience being rewarded will be paralleled in Portuguese [illegible] West Africa.

No. 1

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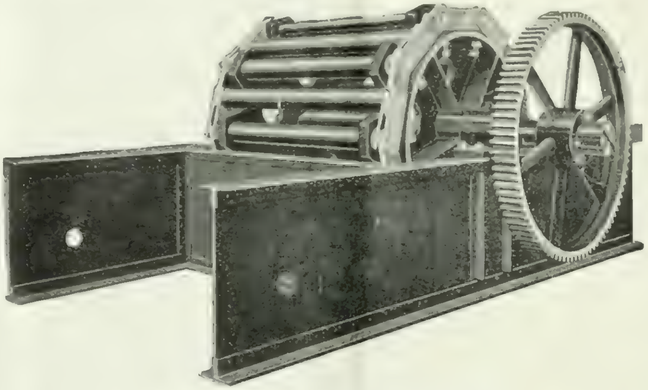

SCREENING UNDER UNUSUAL CONDITIONS.

Early in 1921 The New Ulm Stone Quarry Co., Minnesota, installed a Ross Feeder-Grizzley to take a quarry output of 100 tons an hour of hard granite carrying a very large percentage of pieces weighing from 2 to 2½ tons—dumped direct on to the grizzley from a height of about 8ft. The products are under and over 4in.

Although hundreds of thousands of tons of this abrasive material have been dealt with by the screen since 1921, under these conditions, it has not been repaired in any way nor have any renewals been necessary.

SUCCESS AND THE ACKNOWLEDGMENT.

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The Week in the Sharemarket.

A SLIGHT REVIVAL—GOLD HIGHER—LONDON ADVICES OPTIMISTIC.

In a small way, the market has experienced a welcome revival. The improvement has been general, except for diamond shares, which have hardly responded to the more optimistic feeling. The rally in gold shares was due to London buying, encouraged by the better outlook in Europe. The more important point, however, is the intrinsic value of South African mining shares, and the fact that the industry is doing well at present. Corner House stocks were notable for the rises in City Deeps and Nourse Mines, Modders also being well bought for London, and for local investment. Durban Deeps have also been inquired for, and Village Deeps rose on very little buying. Barnato stocks were all the turn-up, and New States, contrary to expectation, rose in sympathy with the rest of the market. The bear position of this stock keeps it at a firm level. Randfonteins came over par. Van Ryn Deeps, on rumours of an addition to the plant, were a good market. Langlaagte Estates remained steady. States hardened. New Kleinfonteins, on the rumour of some prospects of better development, hardened, with local buying. The General Mining Group of stocks were featureless. New Consolidated Goldfields featured Robinson Deep B shares, which were in considerable demand. The A shares remained steady. Simmer and Jacks, on exaggerated rumours as to the curtailment of operations, fell away at one time, but recovered. The temporary shortage of native labour hampered the mine to a certain degree, but the difficulty is being overcome and normal conditions will be restored almost at once. Of Union Corporation stocks, Gedulds improved. Modder Deeps also hardened on the improved development. Anglo-American stocks have been a feature of the market. Springs, after falling back, recovered on oversea buying. Brakpans have been well bought and appear to be going better. West Springs hardened to just below par. Anglo-Americans also improved. Their diamond interests, however, were dull. There is nothing of note to be said of diamond shares. The market for gems is quiet, and will remain so until the Christmas trade improves. A better tone is, however, expected. Crown Diamonds have not so far issued any reassuring statement as to the progress of operations at the mine. Witbank collieries have declared a dividend of 2s. to shareholders registered on the 31st of August. The investment market has been very quiet. Very little was done in Loans, and Bank shares, with the exception of a few Nationals, were scarcely dealt in. Robinson Deep debentures were bought in a small way. The South African register appears to be absorbing a great deal of the London issue of this debenture. The feature of the market throughout was the improved tone. The absence of any real floating supply of better class shares makes prices respond readily to any buying. There appears to be considerable room for improvement in many stocks apart from speculative interest. London advices as to the possibilities of the market are optimistic. The price of gold is higher.

	Fri. 17th.	Sat. 18th.	Mon. 20th.	Tues. 21st.	Wed. 22nd.	Thurs 23rd.
Anglo-Am. Corp.	21 9*	22 0*	22 3	22 3*	22 9	23 [illegible]
Apex Mines		5 6*		5 6*	5 6*	
Aurora Wests	6 6†		6 1†			
Brakpan Mines	58 0	57 6*	57 6*	58 3	59 0	59 [illegible]
Brick and Potteries	1 0*	1 0*		1 0*		1 [illegible]
British South Africa		12 3†				
Bushveld Tins			0 3			
City and Suburbans				2 6*	2 7*	
City Deeps	53 0	53 9	54 6	54 6	54 9	54 [illegible]
Clydesdale Colls.	17 3†	17 3†	17 3†	17 3†		17 [illegible]
Con. Diamonds	20 0†	19 6*	19 6*	19 6*	19 9	19 [illegible]
Con. Investments	32 0†			32 0†		
Con. Main Reefs	9 4*	9 6*	10 0	10 0	10 0*	10 [illegible]
Coronation Freeholds.	0 5*		0 5*	0 5*	0 6*	0 [illegible]
Do. Syndicates	5 3*	5 3*	5 1*	5 4*	5 3*	[illegible]
Crown Diamonds	6 5	6 5	6 6	6 7	6 8	6 [illegible]
Crown Mines	47 9*	47 9*	48 0*	47 9*	48 3*	50 [illegible]
Daggafontein Mines.	2 1*	2 1*	2 2	2 1*	2 3	2 1*

	Fri. 17th.	Sat. 18th.	Mon. 20th.	Tues. 21st.	Wed. 22nd.	Thurs 23rd.
Durban Rood. Deeps	15 3	15 0*	15 3*	15 1*	15 6	15 3*
East Rand Coals	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
East Rand Deeps		0 7*	0 7*	0 7*	0 7*	0 7*
East Rand Props	4 3*	4 4*	4 6*	4 6*	4 9*	5 0
Eastern Golds	0 4*	0 4*	0 4	0 4*	0 4*	0 4*
Ferreira Deeps	5 6*	5 6*		5 9*	5 9*	
Frank Smith Dmds	3 0*	3 2*	2 11	2 11*	2 11*	2 9*
Geduld Props.	58 6	58 9*	58 9*	59 0*	59 3*	60 0
Geldenhuis Deeps	4 0*	4 0*		4 0*		
Glynn's Lydenburgs		13 0*	12 9*	12 6*	12 6*	13 0*
Govt. Areas	112 6*	113 0	113 0	113 0	113 0*	114 0
Hume Pipes	8 0*	8 0*	8 0*		8 6†	8 6†
Lace Props.	7 6*	7 9†	7 9*	7 6*	7 9*	7 6*
Langlaagte Estates	23 3½	23 3	23 4½	23 3	23 3	23 9
Leeuwpoort Tins	4 3*	4 3*	4 3	4 1½	4 6	4 3*
Luipaardsvlei Est		4 3†	4 0†		3 9†	
Lydenberg Farms	2 6*		2 6		2 6*	2 6*
Middelvlei Estates			1 1		1 0*	1 0*
Modder B's	23 0*	23 4*	23 3*	23 9	23 9	24 3
Modder Deeps	39 9*	40 0	40 0	39 6*	40 0	39 9*
Modder Easts	5 9*	5 9*	5 9	5 6*	5 11	5 9
Natal Navig. Colls	26 9*		26 9*		26 9*	27 0*
National Banks	120 0*	120 0	120 0†	120 0†	120 0	120 0
New Eland Dmds	37 6*	37 0*	37 0*			39 0†
New Era Cons	6 10*	7 0	7 0*	6 9*	6 10*	6 10*
New Geduld Deeps			0 6*	0 6*	0 6*	0 6*
New Kleinfonteins	4 9*	4 10*	5 0*	5 2*	5 6*	5 6*
New Modderfonteins	80 3	80 6	80 6*	81 6	81 9*	82 0
New Primrose			3 6†			3 6†
New State Areas	32 6	33 0	34 6	34 0*	34 6	35 0
Nigels	6 0*	6 0*	6 0*	6 9*	6 0*	
Nourse Mines	14 0*	14 3*	14 4	14 3	15 0	15 3
Pretoria Cements	36 0*	36 9	37 0	36 9*	36 9*	37 0*
Rand Nucleus	1 2*	1 3†	1 3†	1 3†	1 1*	1 3†
Rand Select Corp		52 6*	52 6*	52 6*		52 6*
Randfontein Cent.		11 0*	11 0*	11 6	11 0*	12 0*
Do. Estates	19 0	19 3*	19 6	19 6	19 9*	20 1½
Rouxville Diamonds					0 11	1 0†
Roberts Victors	7 0†		7 0†	5 0*	5 6*	5 6
Robinson Deep "A"	33 0	33 6	33 6*	33 3*	33 3*	33 0*
Robinson Deep "B"	15 6*	14 3	15 1*	15 2	15 3*	15 6
Rooibergs	3 3†	3 3†	3 3†	2 9	2 10*	2 9*
Ryan Nigels		2 6*	2 6*			4 0†
Rose Deeps			10 06			
Shebas	2 3	2 3*	2 3*	2 3*	2 3*	2 3*
Simmer and Jacks	2 8*	2 7*	2 8	2 5	2 7	2 7
S.A. Breweries	30 6*	30 0*		30 0*	30 0*	
S.A. Lands	3 3		3 2*		3 2*	3 2*
S.A. Reserve Bank	£129*	£130	£125*	£126*	£131*	£133*
Springs Mines	47 0	47 0*	47 3	46 9	47 3*	47 6
Sub Nigels	10 6*	10 6*	10 9	10 6*	10 10½	10 9*
S.A. Alkali	9 6*	9 6*	9 0*	9 0*	10 6†	9 0*
S.A. Townships	10 0*	10 0*	10 0	10 0*	10 0*	10 3*
Transvaal Lands		12 6*	14 9*	15 3*	15 3*	15 6*
Transvaal G.M. Est	11 3	12 3	12 0	12 0*	11 6*	11 3*
Transvaal Silvers		13 0*			14 0†	13 0*
Tudors	6 5†					
Union 5 per cent	£101*	£101*	£101*	£101*	£101*	£101*
Van Dyks	0 10.	0 10	0 9*	0 9*	0 9*	0 9*
Van Ryn Estates	12 6*		13 0*	13 0*	13 3*	
Village Deeps	11 0	11 0*	11 0*	11 0*	11 6*	12 0*
West Springs	19 7*	19 6*		19 7½	19 6*	20 0
West Rand Cons	4 3		4 0*	4 0*	4 0*	4 0*
Western Rand Est	2 0†	1 6*	2 0†	2 0†	1 8*	1 9*
Witbank Collieries	33 3†		31 3*	31 9*	33 0†	32 3*
Witwatersrands	13 6*	13 9*	13 9*	13 9*	13 6*	14 1
Wit. Deeps	15 0	15 0*	15 6	14 10*	15 0*	15 6*
Zaaiplaats Tins	4 11	5 0	4 11	4 10	4 10*	4 10*

* Buyers. † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

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TOPICS OF THE WEEK.

Research and Mine Working Costs.

"Without research work so-called 'quantity production' is practically impossible. It is to the full development of the methods of quantity production that lower running costs will be due," said Mr. J. W. Kirkland in his valedictory address to the S.A. Institution of Engineers, the other day. What may be called an elaboration of this idea—though it is also much more than that—is the address delivered last Saturday night by Mr. F. W. Watson, the President of the Chemical Metallurgical and Mining Society. Mr. Watson's address represents the thought and experience of one who has been many years on the Rand, and it is full of practical matter. That portion of Mr. Watson's paper which is devoted to an *apologia* for the work of the chemist and research laboratory on the mines is surely unnecessary to-day when the value of research is being preached in every industry. In the Medical Research Bureau the industry has an ever-present illustration of what, to take no higher ground, may be called the economic value of scientific investigation. He is not likely, therefore, to forget what benefits research may mean in other departments of the industry. Mr. Watson's paper, however, is a welcome reminder and epitome of what one of the largest groups is doing in this direction, and for that reason we venture to say it will be read with interest not only on the Rand, but on other mining fields throughout the world.

Brighter Diamond Prospects.

The New Jagersfontein annual report for the year ended March 31, 1923, reflects the wonderful recovery in the diamond market. For 1921-22 the sales of stones represented £18,500, last year they jumped to £455,800. The bulk of this, of course, represented diamonds on hand at the date of the previous balance sheet, work was not resumed until November, 1922. After providing for taxation the substantially increased balance of £92,000 remained to go forward. There is the gratifying feature of an improvement of £100,000 in the cash position. The dividends, it may be recalled, totalled 30 per cent., as against 25 per cent. for 1920-21, and nothing in respect of the intervening period, 1921-22. At the meeting the shareholders were informed that they might confidently anticipate another announcement in September. The statistics relative to the mine show a marked reduction in the stocks of ground, the blue now figuring at 40,400 loads and the hopperings at 93,400 loads only, as against 116,400 and 381,700 twelve months previously. The manager, however, intimates that while the available hopperings cannot be estimated, they are in excess of 300,000 loads. At the No. 13 washing gear, which replaces the No. 12, the third unit was completed towards the end of the year, also the overhauling of No. 11 gear. The company is, therefore, in a position to meet an increase in the demand should it materialise.

"White Coal in Sabie District."

The Electrical Supply Commissioners have recently been visiting the Sabie district to investigate the water-power possibilities of the district. It will be remembered that this was one of the first items on the agenda of the Commission.

On August 9 a meeting was held at the Windsor Hall of all those interested, including representatives of the Transvaal Gold Mining Estates, Glynn's Lydenburg Co., and all the small mines operating in the district, for the purpose of discussing fully the potentialities of the district and its immediate requirements. Most valuable assistance and data was given by Mr. Elsdon-Dew, consulting and mechanical engineer to the Central Mining and Investment Corporation, by Major Trevor (Government Inspector of Mines), and by Mr. Dyke Poynter (Mining Commissioner, Pilgrims Rest). After expressions of welcome to the commissioners by Mr. Elsdon-Dew and Mr. James Anderson, chairman of the association, evidence was given showing the immediate necessity for increased power. History was also forthcoming as to the progress and stability of the Sabie gold fields and their enormous possibilities. Plans were handed in showing claim and mynpacht areas held and areas already worked out. The total number of claims held by members of the association was 1,180, in addition to 640 acres under mynpachten, of which less than 10 per cent. had been worked out. The scheme under discussion and the only one which was capable of expansion up to an output of 8,000 to 10,000 h.p. was the Sabina valley. Dr. Van der Bijl, in reply, explained the powers of the board, also the enormous amount of ground work and detail required before a final decision could be arrived at in a matter of this sort. He congratulated all the mines in the district on their progress and apparent prosperity in the face of the most extraordinary difficulties, and said he realised the urgent necessity of a large power scheme if these fields were to continue their present progress. What he had seen and heard certainly appealed to the members of the board present, and he urged the necessity of an immediate hydrographic survey of the Sabina valley and adjoining sources of water supplies. A committee was then formed, to include Dr. Van der Bijl, Mr. Fulton, Mr. McColm, Messrs. Damant, Elsdon-Dew, Normand, James Anderson and Col. T. G. M. Macfarlane. It was decided that Col. Macfarlane be appointed to proceed as soon as possible to carry out a hydrographic survey of the Sabina scheme.

Mine Operations Curtailed through Native Labour Shortage.

The effects of a shortage of native labour are being emphasised by curtailment of operations at numerous points along the Witwatersrand. Quite recently the Crown Mines mill has on two occasions been hung up through shortage of boys, and within the past few days the Consolidated Goldfields has intimated that owing to the acute scarcity of native labour on the Spaarwater and Geduld, it has been necessary to curtail operations in No. 3 shaft. The management has reluctantly decided to close this portion of the mine, and this necessitates the gradual retrenchment of a small number of Europeans. As soon as the native labour position is restored, operations are expected to be resumed without delay.

Another mine which has been very badly hit by the shortage of native labour is the Luipaardsvlei Estate and Gold Mining Co., Ltd., which has been compelled to suspend all development work. The company has recently lost 600 time expired boys. Further development is imperative if the Luipaardsvlei is to carry on, and the company, with a view to improving the underground position, recently commenced the equipment of the new shaft on the Battery Reef East Section. Through shortage of native labour the company has lost several thousands of pounds, and a considerable portion of these losses has had to be taken from capital. Luipaardsvlei obtained further capital for the Battery Reef East Section last March, and a substantial portion of this has had to be employed to meet losses.

Various other mines are feeling the native labour shortage, and have felt the effects of an insufficiency of coloured labour for some time past. Obviously, the only remedy for the position is the relaxation, by the Government, of the restrictions on the recruitment of East Coast boys. Commission after commission has, after making the most thorough investigations, reported that the employment of white labour in and on the Witwatersrand gold mines, is based on the continuous availability of an adequate supply of cheap coloured labour. And the restrictions on recruiting in Portuguese East Africa must, clearly, therefore, result in contraction of employment for white men.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

* * *

Increases of Capital.

The [illegible] Gold Estates, Ltd., has increased its capital from £6,000 to £20,000.

Messrs. S. Sykes and Co., Ltd., has been registered with a capital of £100,000.

* * *

Transvaal Platinum, Ltd.

A company called the Transvaal Platinum, Ltd., was registered on the 23rd July with a capital of £5,000, to develop the platinum discoveries in the Waterberg district.

* * *

New Eland Diamonds, Ltd.

Holders are reminded that applications for the new issue, accompanied by payment in full, must be sent to the company's office before September 4.

* * *

The McDuff Case.

Judgment was given in the McDuff case last week in favour of the defendants, and the very clear summing up of the judge left no room for doubt that any other decision could reasonably be come to.

Messina Copper.

The following figures for the month of July were supplied by the management of the Messina Mine: 13,000 long tons of ore were raised, which was concentrated to 1,035 tons. From the smelters 670 long tons of ingots and matte were shipped. The matte furnace is being extended to increase the output. At Vogelenzang sinking is proceeding, and expansion in the development of the seventh level with machines is taking place. The employees still number 145.

* * *

The Future of " King."

We have received from the Publicity Department of the South African Railways an official, illustrated handbook on Kingwilliamstown, "its natural advantages, historical associations and commercial activities." The work has been issued under the joint auspices of the Kingwilliamstown Municipality and the South African Railways Publicity Department. The handbook is designed for the purpose of bringing Kingwilliamstown to the notice of investors and others, and of drawing attention to the centre's advantages and attractions. Copies (free of charge) may be had upon application being made to this office. It is excellently produced and a credit to all responsible for its preparation.

* * *

Central African Minerals.

This week's mail papers contain the lengthy and important speeches made by General Sir Reginald Wingate and Mr. Robert Williams at the Tanganyika Concessions and Zambesia Exploring Company's meetings, and by Mr. Edmund Davis at the annual foregatherings of the Rhodesia Broken Hill and Bechuanaland Exploration Companies. Extreme pressure on space prevents us from dealing with the meetings of these concerns which have such a big say in the development of Africa's mineral resources north of the Zambesi River, but we propose to devote to them the space they merit in our next week's impression.

* * *

Transvaal Platinum.

The silence regarding this company has been broken by the issue of a report signed by Mr. Max Baumann dealing with what is described as "initial prospecting work on what was believed to be the strike of a lode containing platinum in the Waterberg district." The names of the farms are given and the results of the assays. These have already appeared in full in the daily papers. The engineer's report winds up with replies to certain remarks that have recently appeared in this paper in regard to platinum in general. In view of the unfortunate history of the past platinum discoveries, in this and other countries, and the general nature of our statements, there does not seem to be anything for us to retract.

* * *

From One Bank to Another.

The speech from the chair at the annual meeting of the Standard Bank in mail week has already been fully reviewed in our columns. Mention, however, should be made of the graceful tribute paid by the Chairman, Lord Selborne, to Mr. J. R. Leisk, the Chairman of the National Bank, whose lot has not recently been a happy one. Lord Selborne said:—"The truth and accuracy of this statement (about trade depression) have been remarkably illustrated by the speech of my friend Mr. J. R. Leisk, chairman and managing director of the National Bank of South Africa, delivered at the annual meeting of that bank at Pretoria on June 29 last, and fully reported in the London papers. The depression of trade has, indeed, been world-wide in extent and unexampled in severity, and the experiences of the National Bank, explained by Mr. Leisk, are one of the consequences of that depression. I trust that Mr. Leisk and his colleagues on the board of the National Bank, and the shareholders of that bank, will allow me to express the great interest with which we have read his speech and our cordial good wishes for a prosperous future." Is not that, after all, the right spirit?

A Succesful By-Products Plant.

Speaking at the annual meeting of Henderson's Transvaal Estates, Lord Oranmore and Brown said: "The erection of the by-product plant on Tweefontein was finished during the year. The plant was installed in the first instance for testing purposes, and in order to demonstrate the advantages of generating gas for industrial purposes, together with the recovery of tar, ammonia, and other products from by-product coal for which no market exists at present. The plant was worked continuously for four months under various conditions, and an elaborate series of tests were made, which have proved that a good producer gas and a high yield of tar and ammonia can be recovered from the coal, which, owing to South African market conditions, has hitherto been dumped. Besides the gas which has been utilised under part of the boiler plant of the Tweefontein Colliery, there has altogether been produced 33½ tons of sulphate of ammonia and 35,000 gallons of tar. The tar has been sold in its raw state to the Johannesburg Municipality, and we have been informed that it is entirely suitable for road purposes. Both the tar and ammonia produced during the trial runs realised satisfactory prices. The experience gained has also furnished the information necessary for introducing modifications and for providing the additional plant required to produce sulphate of ammonia and tar in such a manner as to make the undertaking commercially attractive."

* * *

The New H.E. Proprietary.

The H.E. Proprietary has never, either in its new or old form, been too successful in its South African ventures, but the latest report shows some gleams of encouragement.

The position of the Company's property on the Far Eastern Rand, namely, the freehold of the Farm Klippoortje (northern portion 3,241 acres), remains as stated in last year's report. In the opinion of the directors the time has not yet come to undertake active mining operations on this property. In the meantime developments on neighbouring properties are being carefully followed. In the opinion of the Board there can be no question but that the Farm Klippoortje constitutes a mining asset of great potential value. The position of the New Lisbon Berlyn Company has recently become one of some interest. It will be remembered that on the outbreak of war the mine on the Farm Frankfort was shut down, with a developed ore reserve of over 100,000 tons. The extraction presents certain difficulties which, however, with the progress of metallurgical science, have been overcome by various mines in Rhodesia and elsewhere, possessing similar ores. Entirely fresh discoveries of gold occurrences have recently been made by prospectors on the farms Lisbon and Berlyn. While it would be premature at present to express a decided opinion as to the importance of these discoveries, the reports and results so far received are sufficiently encouraging to justify further prospecting work being undertaken. The H.E. Company has accordingly agreed to advance the New Lisbon Berlyn Company a further sum of £2,500 to be devoted to the necessary work, under the direction of their engineers in consideration of having the right to reorganise the capital of the New Lisbon Berlyn Company. Since the close of the accounts the H. E. Company has participated in the issue of additional working capital for the Luipaards Vlei Estate and Gold Mining Company, Limited, guaranteeing a new issue of 4s. shares which rank equally with the existing £1 shares. Although the Luipaards Vlei Company is making at present only nominal profits, there is good reason to think that recent developments in two sections of the Company's mining property open up the prospect of considerable profits being made as soon as those sections are sufficiently developed to supply the mill.

Unfortunately, since this was written the native labour shortage has resulted in the stoppage of development, and it may be some time before even the modest hopes mentioned in the report can be realised.

THE BOARD OF TRADE AND INDUSTRIES.

The Board of Trade and Industries is a board appointed by the Government with a view to fostering the industries of the country. In these days when a deliberate attempt is being made to induce the South African public to believe that the Government favours the mining industry, it will surprise people to know that the mining industry has no representative on that board and, more surprising even than this, that there is not a single member of that board who is in any way *au fait* with the problems affecting the industry. The mining industry may be most vitally affected by recommendations of the board, but the Government has persistently refused to alter this extraordinary position. And yet there are politicians who tell the public that the Government is in the pocket of the mining industry.

BRITAIN'S ELECTRIC MOTORS.

We have received from Messrs. Britton, of 110, Cannon Street, London, E.C.4, a valuable and interesting series of catalogues and other publicity matter issued by the firm, which is one of the leading makers in England specialising in electric motors. Those interested may inspect the price lists and catalogues at our offices.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Aug. 30.—General Mining and Finance Corporation, Ltd (a), 11 a.m.

Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

The South African Mining & Engineering Journal Year Book

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Letters to the Editor.

RAND STRATIGRAPHY.

To the Editor, S.A. *Mining and Engineering Journal.*

Sir,—It may not be generally known to those interested in the stratigraphy of our wonderful Rand that for drainage purposes the Town Council is cutting a very interesting section along Von Brandis Street, S. to N., exposing the various coloured sandstones and shales, etc., pertaining to the upper series of conglomerate beds lying north of the much vaunted Main Reef series, or "*the* Reef," as it is given to the world.

The workmen have already cut through and filled in the Blue Sky series, or "Molyneux" of Heidelberg, which everyone knows traverses our Market Square, and they are now entering the famous Van Ryn on Von Brandis Square, the western extension of "Langermann's Kop" at Kensington, where all the reefs of this series are faithfully indexed.

My contention that "the richest reefs of the Witwatersrand geological age (which is five miles thick, by the way) underlay Main Reef series," has, so far, fallen on deaf ears, but when the rising generation of capitalists begins to sit up and take notice, "fed up," most likely, with the deep and deeper deeps of the old brigade, it will, as sure as rocks are rocks, turn its attention to the nearby outcrops, which are pointers to hidden treasures.

In the meantime it is devoutly to be hoped that the Government will, with firm hand, for posterity's sake if not its own, prevent these series from being smothered with a layer of bricks and mortar, as in the case of Johannesburg proper, which has effectively sealed up millions of pounds worth of gold under its foundations.

Fortunately, however, for this wasteful country, nature has still in reserve—apart from Black Reef series, which is quite all right—scores and scores of miles of the same auriferous formation between here and Klerksdorp, and elsewhere—but *quantum sat.*

I am, etc.,

SCOTT ALEXANDER,
Rand Stratigraphist.

Johannesburg,
August 14th, 1923.

THE COTTON ADVISORY BOARD.

To the Editor, *S.A. Mining and Engineering Journal.*

Sir,—I have been much interested in the short article you printed on July 20, sent from Manchester, purporting to give the opinions of "a leading spinner" and "a leading manufacturer" on the present situation in the cotton trade, and obviously written to belittle the efforts of the Provisional Emergency Cotton Committee. Especially has it interested me to note how many of the newspapers this correspondent represents, for it appears "From Our Own Correspondent" in all kinds and conditions of papers—papers that are widely dissimilar in view and which do not usually copy each other literally, at all events. I, therefore, do not think I am far wrong in regarding it as emanating from a specially interested source, and in regarding it also as propaganda aimed at injuring all who do not agree with, or are not content to accept, the views of those who believe in taking the line of least resistance and hoping for the best. Now, I have no objection whatever to propaganda fairly and openly carried out—I have all along been too great a believer in the power of the press to take objection of this sort—but I do think it would be more honest and straightforward if those who disseminate these paragraphs would give the names of these "leading spinners" and "leading manufacturers" who are said to be ridiculing the scheme of an Advisory Board for the controlling of the industry, and laying it down with a pretence to authority that such a body never could do anything to relieve the present depression. They admit, by the way, that such a system was "all right during the war," and refuse to see that the effects of the war are just as great to-day as they were when our armies were in the field. The chief indictment against myself and those who think with me, is that we are "trying to put the cotton trade into a close corporation." If this means that we are trying to form some big trust which would be inimical to the interests of the consumer, then I say the person who makes this statement is totally misrepresenting the position, for over and over again I have denied that there is any intention of controlling the trade in the interest of the exploiter and maker of big profits.

It is to keep the trade on an even basis, to stop abnormal profits in boom times and big losses in slack times that we want an Advisory Board, for the members of the Provisional Emergency Committee recognise that it would be far better for all concerned, consumers included, if the trade could be steadied down and made to pay a moderate and reasonable return regularly on its capital rather than that the pendulum should swing backwards and forwards so violently as it does at present. The "well known cotton-spinner" goes on to ask what has become of the Manchester School of Politics, and what has become of the people who believe in free competition and Free Trade? Well, I need hardly remind anyone who takes the slightest interest in political affairs that we in this country have become more wedded to the doctrine of Free Trade than ever we were, and that, so far as free competition is concerned, the Lancashire trade fears no rival in any part of the world. It is not international competition that is troubling us now, however, but a domestic cut-throat competition which has arisen through the trade being in a badly-organised condition. It is to put order in the place of chaos that we are asking for an Advisory Board, something that will give real guidance and not allow the trade to drift about like a ship without a rudder. We are as keen on Free Trade and free competition as ever we were, but we must have some semblance of order in our own house. Sir Eric Geddes, I take it, has had as much experience of business as the "leading manufacturer" you quoted, and he stated at Bradford recently that what was necessary to stop the cycles of booms and slumps in trade was to restrict the production of goods so that supply more closely met demand, leaving little or no surplus to be jobbed or wasted. Now this is just what is being aimed at by the Provisional Emergency Cotton Committee—this and nothing more. This is the only "artificial means of reviving industry," of which we are in favour. We had no desire to restrain initiative in any way, or to harass anyone in the conduct of his own business. These are bogies which the enemy is setting up in order to preserve its policy of inanition. As for such talk as that the only remedy for the cotton trade depression is for each individual firm to cut down overhead charges and cost of production, the writer cannot know a great deal of what is going on in the mills at the present time. With raw cotton standing at over twice as much as it was before the war, there would have to be much cutting down of overhead charges before we could make both ends meet. What is wanted is something more than this—something that will give us a firm grip of the whole situation, and keep us prepared for all contingencies. With such a body in being, and with the spinners and operatives co-operating, we could look forward to years of steady trade, in which the public as well as those engaged in the industry would reap untold benefits.—I am, etc.,

CHARLES W. MACAN.

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INDUSTRIES SECTION.

Pretoria's Optimistic Prospects.

INDUSTRIALISTS FEDERATE—PRESIDENT FORESEES BIG DEVELOPMENTS—IRON AND STEEL RESOURCES—CEMENT WORKS OPERATING AT CAPACITY—CAN THE "POOR WHITES" BE DISCIPLINED AND ABSORBED ?—A PRACTICAL EXPERIMENT.

Pretoria certainly does not look like an industrial centre either in being or in embryo; but it is perhaps significant that the past week has witnessed the inauguration of the Pretoria branch of the Transvaal Chamber of Industries. True, its membership is only about thirty, but that there should be even this number of manufacturers in a city which has hitherto been quite content with the distinction and moderate prosperity attaching to it as the capital and administrative centre of the Union may be taken as symptomatic of a new phase in its history.

No one, of course, would like to see its imposing public buildings soot and smoke grimed, but in these days industrialisation need have no such disfiguring accompaniments, and development can proceed along ordered lines and in prescribed areas. Indeed, whether its inhabitants like it or not, the day has passed when Pretoria can say whether or not it shall become a manufacturing centre, because, although they are not, perhaps, conspicuous to the visitor, there are in existence to-day quite a number of established industries, and, if these are not quite so flourishing as their promoters might wish, it is merely a temporary depression by no means confined to Pretoria.

It would, for instance, be absurd to suppose that a community, however proud of its beautiful town and its almost exclusive concern with the business of government, could afford to neglect such enormously valuable deposits of rich ironore as those which run through the town lands of Pretoria, and, whether its present population welcomes the prospect or not, it must resign itself to the inevitability of the future exploitation of this mineral wealth. It is, in fact, proposed to erect works on the basis of an output of 200 tons per day, and there is every reason to believe that the project will be successful. Both the coke and the lime supplies have been found satisfactory, and, generally speaking, the prospects are officially described as excellent.

The iron and steel industry will, of course, encourage the development of a dozen or more subsidiary industries, and there are already in existence a number and variety of manufacturing concerns that possibly even comparatively few Pretoria people themselves realise. There is, of course, the well-known Portland Cement Works, and the Silverton Boot Factory and Tannery; there are also soap works, several flour mills of considerable importance, brick, tile and pottery works, engineering shops, tobacco manufacturers, chemical works, mineral water factories, canvas and tent making, a diamond-cutting industry, and, although this list is by no means exhaustive, one must not forget Pretoria's latest industry—that of money-making in its most literal sense.

Where Money is Made.

Incidentally, it is interesting and significant to note, when considering Pretoria's manufacturing and industrial resources, that its Mint (exclusive of equipment, which was obtained from England) was constructed almost entirely of South African material, and, in fact, largely of Pretoria products. The cost was approximately £130,000. The bricks for the walls were made in Pretoria, and are of a rich reddish colour, of excellent surface and handsome appearance; the dressings are of Elands River stone, from the Rustenburg district, west of Pretoria, and the roof consists of slate tiles from the Zwartruggens. The building site is six acres in extent, and the total amount of flooring space 73,000 square feet.

The processes undergone by the several metals which constitute legal coinage are more or less common to all. Gold, of course, is—or will be when a gold currency is re-established—procured for minting purposes from the mines of the Witwatersrand, silver will be extracted from the gold bullion at the Germiston Refinery, and it is hoped to be able to purchase copper of the required purity in the Transvaal, and perhaps other parts of the Union. The unrefined bullion, after it has been extracted from the ores in which the metals are obtained, is sent to the refinery. Up to the present this purifying process has been done in England, but the gold refinery at Germiston has shown such considerable saving, and is working so efficiently, that it is expected in future to obtain there the refined ingots required by the Mint for coining purposes.

Once the ingots have been assayed and weighed at the Mint, and the metals for alloy exactly proportioned, the actual process of minting is simple, though at the same time highly scientific and accurate. The ingots are recast to a convenient size; the bars thus produced are rolled out and cut into discs, which are stamped and weighed and the finished products will be put into circulation mainly by way of the Banks and Post Offices.

Success of S.A. Cement.

Interesting, however, as this latest addition to the town's "industries" may be, the Mint perhaps scarcely comes within the strict interpretation of a local industry. Pre-eminent in this category is the Pretoria Portland Cement Works—though of course, in due course, the iron and steel industry will occupy the premier position. At present, however, the cement works rank next to the Government Departments and Railways from the point of view of employment and value of output. The cement works are employing about 50 Europeans and 300 natives, and the average monthly output is in the neighbourhood of 80,000 bags of cement. Recent reorganisation and speeding-up at the works has effected an increase of something like 5,000 bags per month. The principal demand comes from the Government for railway and harbour works, grain elevators, and other public works. The activity in the general building trade is also an important factor, and it has been found that the farmers are taking larger supplies, from which it may be assumed that they are realising the manifold uses of cement and are spending some portion of the proceeds of their very satisfactory harvest in the improvement of their properties.

This concern, which is admittedly one of the most successful manufacturing enterprises ever established in the Union, has for a long time been working at full capacity, and could find a market for a much bigger output if the necessary plant could be provided and the extensions effected. Despite its huge output, the Union still imports cement to nearly the same value as was brought into the country ten years ago, last year's figure being nearly 100,000,000 lbs. of cement valued at £117,419, while in 1913 the value of imported cement was £125,616. From these figures it will be seen that the country's consumption of this commodity has enormously increased, and that the local production has plenty of scope for expansion.

Some idea of the extent of the Pretoria works can be gathered from the fact that 120 tons of coal are consumed daily by the six Stirling boilers which raise steam for the two turbines of 1,000 horse-power each, and the engines of [illegible] horse-power which generate the electric power to run the plant and drive the crushers and kilns. The kilns in which the limestone and shale, which form the principal constituents of cement, are burned are huge revolving structures [illegible] feet in length, and visitors who watch this very interesting process are always impressed by the spectacle of the great tongues of flame travelling the entire length of these kilns, resulting from the combustion of the pulverised coal sent into the kilns by powerful blasts of air.

After burning, the cement has again to be finished, and by an ingenious automatic mechanism the prescribed percentage of gypsum is then added for the necessary purpose of "slowing the setting" of the cement when in use, as otherwise in this country the cement would set too rapidly. A remarkable illustration of the extreme care taken to ensure the maintenance of the cement at the required standard is the fact that chemical analyses are taken of the product every half-hour, an excellently equipped laboratory being an important part of the establishment.

In addition to the industries already established within its boundaries, Pretoria is also the natural centre of the citrus, cotton and tobacco industries in the Transvaal; the potentialities of these industries are almost incalculable, and in their development and prosperity Pretoria will, of course, participate. From these considerations it will be seen that the Union capital can no longer remain content with its exclusive pre-eminence as the seat of government, but rather that its future lies largely along the lines of industrial development. In the past, it must be confessed, Pretoria's principal "industry" has been the imposition of taxation, and if the same ingenuity and fertility of inventiveness can be applied to the still more profitable exploitation of the natural resources and raw materials which abound in the district, there should be no fears for the success of its manufacturing enterprises.

The Outlook for Industries.

That the industrialisation of Pretoria is no mere dream of the visionary, but a possibility of the early future, may be concluded from the fact that so eminently practical a man of affairs as Mr. Charles Maggs has accepted the Presidency of the Pretoria branch of the Transvaal Chamber of Industries. He is, as is well known, actively associated, in the directorates and in other capacities, with many of the principal business enterprises in Pretoria and district. In an interview he gave the representative of "The S.A.M. and E. Journal," Mr. Maggs expressed himself as very optimistic concerning the industrial future of the town.

Explaining the reason for the formation of the local branch of the Chamber of Industries its first President said: "We feel that although at the moment we may not be one of the most important centres industrially, the time has arrived when we who are interested in the development of the manufacturing resources of the district should organise and consolidate our forces. Beyond all doubt we have to look to industrial development unless the whole of South Africa is to become a 'poor white settlement.' We realise that development along these lines is not going to be 'all beer and skittles.' We have here a good many people who are not very favourably disposed towards industrial development. Of course, we realise that Pretoria must remain primarily an administrative and educational centre, but with such natural resources as we have here it would be impossible to remain at this.

"Our iron and steel industry will be going ahead very shortly, and this cannot fail to have a great effect upon the future of Pretoria, because it will encourage many other connected and subsidiary industries. I am quite confident that the financial difficulties which have delayed this development will be overcome before very long, and I think, therefore, that our Council has taken a very wise course in extending the lease; the members took a broad, liberal view of the situation, which I venture to think was the only sensible one to take. After all, what is a year or two's delay in connection with the development of such an industry, which is not a wasting asset such as the gold mining industry. Our deposits of iron are so enormous that we can well afford to wait a little time for their development, until the times are more propitious, and I am sure the town will not lose anything by reason of the Council having taken the course it did."

Quality the Prime Factor.

On the general question of industrial policy, Mr. Maggs said local manufacturers must be on their guard against pandering to the universal cry for cheapness without regard to quality. "Our industries," he said, "must be founded more or less on quality to start with. We must recognise that in regard to certain lines we cannot hope to compete against the imported article. I have, for instance, seen samples of imported footwear that are absolutely works of art in cardboard creations, and it is quite impossible for South African manufacturers to attempt to imitate these. I would rather that we took our stand on quality and in giving real wearing value, even if we cannot do it quite so cheaply as these very attractive looking articles that are imported. We must fight against this craze for cheapness at all costs, and avoid the temptation to turn out an article that is more pleasing to the eye."

South African manufacturers do not, in Mr. Maggs' opinion, get the encouragement they have a right to expect, either from the purchasing public or from the Government. "We want reasonable encouragement on the part of the Government," he said; "we do not want to be spoon-fed, but we want such a tariff as every other country in the world in its industrial youth has had. You do not expect a baby in swaddling clothes to be exposed to the cold winter blasts, but the time comes when it can take care of itself, and the same applies to infant industries. We do not want that amount of protection that will make us lazy, but just sufficient to encourage us and to make us self-reliant and to enable us to see daylight ahead.

"So far as taxes are concerned," added Mr. Maggs in reply to his interviewer's inquiry on this point, "I think the pace has been rather too rapid. I am afraid there will not be much coming forward under the super tax this year; we have had a trying time and still have a struggle before us, and if South African industries are to make good it will mean that every man must do a day's work for a day's pay."

Natives or Whites?

Reverting to the general prospects of industrial development in the Pretoria district, Mr. Maggs said that with such abundant resources of raw material and of labour there was no reason why success should not be achieved. On the question of labour, he said it was impossible to ignore the native factor. "They are here; we have not brought them into the country; the only thing is to ensure that by his superior technical knowledge and skill the white man maintains his supremacy. As a labourer pure and simple the white man will not hold his own with the native."

It was reassuring to learn that Mr. Maggs takes a hopeful view of the chances for the "poor whites" in industrial development. He has made the employment of this class of labour a special study, and applied his theories with an encouraging measure of success in his own tannery. A fair percentage of these men are, he assured his interviewer, doing very well. "I do not believe in any sweeping condemnation of the 'poor whites,'" said Mr. Maggs. "I have taken some of these men who were almost at the point of starvation, and to-day seven of them own their cottages and plots of land. From my experience I should say that something like 25 per cent. of these 'poor whites' can be redeemed and made into fairly good workmen; the others shou'd be put into a labour colony, their only hope of salvation is in compulsory work."

Zaaiplaats Tin.

The results for the month of July, 1923, are as follows: The output for the month, including Tributors, was 33 long tons averaging approximately 71·7 per cent. metallic tin. The estimated profit for the month on a basis of £180 for metal was £2,412. The outlook for August is satisfactory.

Electrical Plants in Southern Rhodesia.

By H. W. Geare, A.M.I.E.E.

A brief description of the principal Electric Power and Lighting Plants in Southern Rhodesia may be of interest not so much from a point of view of their size or that they present any very special features of interest as regards electrical engineering problems but rather as showing what has been done in this country, at present so very undeveloped, yet possessing great potential wealth that will in time necessitate electrical power schemes on a large scale for its full development.

Besides a large number of gold mines there are also copper, coal, chrome and asbestos mines in operation in Southern Rhodesia. On most of these mines electrical power plants have been installed, and Table 1 gives some particulars of these plants. In addition to these mines, the principal towns are also equipped with electric light and power plants. Bulawayo, the largest town in the country, less than 30 years ago the site of King Lobengula's Kraal, has had an electric lighting plant in operation since November, 1897. So far as I can ascertain, this was the first electric lighting plant in the country. The present plant consists of three Bellis compound engines, direct coupled to B.T.H. Company's 3-phase, 50 cycle alternators of 250, 200 and 175 K.W. capacity, a total of 625 K.W. The maximum load is 320 K.W., and the yearly output 1,122,000 units. The primary voltage is 2,300 volts. Secondary: 200 for power and 115 for lighting. The boiler plant consists of 1 Babcock & Wilcox boiler of 8,000 lb. evaporation and three each 4,000 lb., one Fraser & Chalmers and one Lindsay Burnet boiler of 3,000 lb. and 4,000 lb. evaporation per hour respectively. The whole plant, together with the network of overhead mains, is undergoing revision at the present time, and the alterations, when complete, will result in a more efficient supply, especially as regards power supply, which will be 3-phase in place of single phase. Besides the town lighting plant, Bulawayo possesses a very up-to-date generating plant at the Locomotive, Carriage and Wagon Workshops of the Rhodesian Railways. Here is the standard 550 volt, 3-phase, 50 cycle supply that is to be found in almost every important plant in Rhodesia. The plant contains the following units: One 720 B.H.P. triple expansion Bellis & Morcom engine, coupled to a 500 K.W. 3-phase alternator; one 300 B.H.P. compound Allen engine, coupled to a 200 K.W. 3-phase 550 volt alternator; two 50 K.W. Reavell sets, supplying 200 volt direct current for lighting Raylton Station, Offices, etc.; two 100 K.W. motor generator sets are substituted for the last named; one 50 K.W. motor generator set, supplying direct current for the coaling crane at the running shed, accumulator charging, etc. This set is run over-excited for improvement of the station power factor. The switchboard contains four generator panels, eight feeder panels and two instrument panels. Constant voltage is maintained by means of a Tirrel regulator. There are 125 motors in use in the workshops, varying from 1 to 75 H.P. The 150-ton electric traverser does the whole of the moving of locomotives and vehicles in the workshop area, thus obviating the use of points and crossings. There are two 60-ton overhead travelling cranes in the erecting shop, sufficient for lifting the heaviest locomotive. The carriage shop is equipped with a 20-ton crane, while the sawmill and foundry each have a 15-ton crane and the machine shop one of 10-ton capacity. An electroplating plant is installed in the electrical shop for renovating carriage fittings, locomotive headlight reflectors, etc. A lead-burning outfit is in use for accumulator repairs. There are 150 vehicles, saloons, dining cars, guards' vans, etc., completely equipped with dynamo and accumulators for lighting, while 81 locomotives are fitted with small turbo-generators for supplying the headlights, cab-lights and drivers' cabooses.

The Shamva Mines, Ltd.

The electrical plant on the Shamva Mine is the largest in Southern Rhodesia. The mine is situated some 56 miles north-east of Salisbury. The reduction plant is capable of treating 60,000 tons of rock per month. Power Station.—In the Power Station are three Parsons turbo-alternators of 1,250 K.W. each, one of which is kept as stand-by. The generators are 3-phase, 2,200 volt, 50 cycle. The average monthly output is approximately 1,500,000 units. The generating costs exclusive of redemption of capital show the remarkably low figure of 0.6d. per K.W.H., considering that the price of coal is 39s. 6d. per ton. The load is ideal, as with two 1,250 K.W. sets running, there is an average steady load of 2,000 K.W. throughout the 24 hours. The coal consumption is stated to be 2.18 lb. per K.W.H. The boiler house contains six Babcock & Wilcox marine type boilers, with self-contained superheater and economisers, each capable of evaporating 12,000 lb. of steam per hour normally. Reduction Works.—The milling plant consists of 64 Nissen stamps and 12 tube mills. The Nissen stamps are driven in sets of eight, by a 50 H.P. 2,200 volt, 3-phase motor for each set. Each of the 12 tube mills is driven by a 125 H.P. 2,200 volt 3-phase motor. Pumping Plant.—The pumping plant for supplying water to the reduction works is situated on the Inyagui River, some nine miles distant. It contains two three-throw pumps, each capable of delivering 27,000 gallons per hour against a 700 ft. head, each pump being driven by a 125 H.P. motor. Three-phase power is transmitted to the pumping station at 6,600 volts, where it is transformed down to 2,200 volts, this being the standard voltage for all large motors throughout the plant.

* Abstract of Paper read before the S.A.I. of E.E.

(To be continued.)

EMPLOYMENT IN AUSTRALIA.

According to overseas advices there is no improvement in labour conditions in Australia, where, as was pointed out in the debate on Socialism in the House of Commons, there is a greater proportion of unemployment than in any other country in which labour statistics are prepared. The mining companies complain of labour inefficiency.

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TRADE SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS STILL DULL—IRON AND STEEL—BRITISH EXPORT CREDITS—BRITISH TRADE RETURNS, JULY — UNION'S ELEVATORS — TIMBER AND BUILDING MATERIALS — TENDERS RECENTLY RECOMMENDED BY JOHANNESBURG TOWN COUNCIL—METAL QUOTATIONS.

General.

Business conditions have again ruled quiet this week. A little improvement has manifested itself from Rhodesia, inquiry from that quarter having been better than for some time, but on the whole, things have been more or less quiescent. Really one does not see very much hope at the moment of things coming our way; too many important factors are against us just now, said a big commercialist this week. The matter of taxation introduced by the Provincial Council, and its inevitable consequences, as evidenced already by the withdrawal of capital from the Union, so forcibly drawn to the attention of the country by the commercial representative of the Star in its last week's issue, is very clear reading to anyone studying the question. The cancellation of credits already entered into with South African institutions is, of course, a very serious financial question, and may have, unfortunately, far-reaching consequences. The London financial nerve-centre is very sensitive and cannot withstand such shocks as have been recently administered by our Provincial Council. Until we have put our house in order, said this leading commercialist, we cannot expect any substantial financial support from Home.

With regard to the European situation, there is a pause at the moment, which may mean either a climb down or partial climb down on the part of France—which at the moment does not seem probable—or a tension of the Entente which may be momentous. At any rate, the present position, in view of Germany's parlous state, cannot continue much longer, and it is to be hoped that some means may be found to end the existing untenable state of affairs, otherwise, so far as can be seen, France's stubborn determination is going to plunge the world into a maelstrom compared with which the Great War was only a spate. When this great problem shall at long last have been solved—and Britain has undoubtedly taken the right road to a solution, carrying with her the opinion of the world outside France and Belgium (notwithstanding America's recent demands)—the Union will be the first to benefit and get a lift such as we have not experienced for years. *En passant*, General Smuts' advice to the farming community in his address at the opening of the T.A.U. Congress at Pretoria on Tuesday last has been welcomed as showing that the Government is very keen on the necessity for organisation and co-operation in agricultural matters. The whole address was replete with sound common sense and broad-mindedness respecting the Union's future agricultural problems.

Business is rather flat in the engineering shops, although conditions, so far as can be seen, is progressing favourably, and may result in good business during the next few weeks. The building trade has slackened off slightly lately, but with the important jobs in contemplation this can only be momentary. The fact is that in this, as in other concerns, the European situation is retarding progress. Nobody at the moment is prepared to launch out, and is awaiting naturally a pointer from overseas. A prominent mining material merchant this week said he found things were fair, but money extraordinarily tight and the banks very cautious in granting credit. As far as stocks are concerned, there was quite a number of people short in certain lines owing to the prolonged dock strike in England, which would probably relieve the pressure as far as merchants forcing their goods on the market at unremunerative prices. This has been the case for some time past. Generally, he thought the tone was improving in comparison with, say, six months ago, but there was a lot still to be achieved before we approached normal. Excess of competition for the amount of business going was our curse, which accounts for the continued price depression. In sum, it requires only a little daylight—a glimmer—to enable the Union to go ahead in the manner she is ripe for and her present conditions justify. Prices of iron and steel goods are practically unaltered.

Iron and Steel.

One very important merchant this week reports business as having been very brisk, but the majority had no such flattering tale to tell, and stated that, synchronising with the time of the month, business was dull. The tendency of merchants to-day is, said one of the foremost, to sell at replacement value rather than turn over big sales at no profit, or scarcely any. At the same time, he said, things are not so serious as they were twelve months ago, when everybody was selling at a loss.

Britain: Mail Advices: Iron and Steel.

A little more business was stirring in mail week, but the improvement was only relative, and was chiefly due to a rather better inquiry from India. Continental works have again advanced their prices, and are much stiffer in their attitude to buyers seeking concessions. On the other hand, Continental merchants have made their appearance in the market, and have quoted prices much below those demanded by the works. On previous occasions similar activities of merchants have been often followed by price reductions by the works. Merchants in Britain, however, as a rule, prefer to buy direct from the manufacturers when dealing with the Continent, and little business has been done at the lowest figures. The uncertainty of the political situation has had a damping effect upon business, and there is a tendency noticeable on all sides to restrict dealings until the outlook becomes clearer. In view of the opinions expressed in London regarding the difficulties under which the French steel industry is labouring, figures recently published by the Comité des Forges de France are interesting. According to these returns, there were 99 blast furnaces working in France on June 1, compared with 38 on May 1, and 116 on January 1. The production of pig iron in May is given as 393,400 tons against 350,500 tons in April. The May production of steel also increased by 33,500 tons, compared with the April output, to 390,250 tons. The cause of the increase, it is suggested, was the abundant supply of coke from the Ruhr, large imports of coke from Great Britain, and an increased production by the French cokeries. In Britain the view is held that the production of iron and steel in France, and particularly in Lorraine, is uncertain, and that an acute position is likely to arise regarding fuel supplies during the next few weeks. The weekly meeting of the London Iron and Steel Exchange in mail week was not well attended. Business was quiet, and although it was reported that Indian and Eastern buyers were taking more interest in the market, only a small proportion of the inquiry developed into actual business.

Pig Iron.

Cleveland prices have been shaded to £5 5s. f.o.b. Continental iron, 2·5 to 3 per cent., silicon has been sold at £4 16s. f.o.b. Antwerp, but the Continental quotations vary to an unusual degree. A small business has been done in basic iron, and Continental material has been offered, but at prices that have not attracted buyers.

Semi-Finished Material.

Quiet conditions have ruled in this market. Continental sheet bars are reported to have been offered at £7 10s. delivered Scottish works; whilst British works have quoted at £7 15s. delivered Midlands. Trading in billets has been very quiet, and down to £8 delivered Midlands has been quoted. There has been a certain amount of inquiry for wire rods, but buyers do not seem inclined to bid more than £9 15s. f.o.b. Antwerp for Continental material, but most of the works demand £10 5s. f.o.b.

Finished Materials.

Business in this market has been rather better this week, and Indian buyers have shown more interest. Continental prices, however, have stiffened, and it is not always easy to buy from the works, as for the most part they are not open to book large quantities. Most of the works are asking £7 15s. for steel bars, although lower offers have been received from Continental merchants. The demand for joists has been quiet, and there have been sellers of Continental material at £7 10s. In British trade the cast-iron pipe department has been one of the most active. Not only has there been a good home trade demand but a fair stiffening business has been put through.

Iron and Steel Output.

The production of pig iron in Great Britain in June amounted to 692,900 tons, compared with 714,200 tons in May. The furnaces in blast at the end of the month numbered 222, four having been blown in and five having gone out of blast during the month. The production included 246,700 tons of hematite, 212,200 tons of basic, 146,500 tons of foundry, and 11,600 tons of forge pig iron. The output of steel ingots and castings amounted to 767,700 tons.

Tinplates.

Although there has been rather more inquiry in this market, the amount of actual business transacted has been disappointing, and prices are barely maintained at the official minimum of 23s. 1½d. f.o.b. for 20 by 14 basis.

Galvanised Sheets.

At the beginning of the week a fair volume of inquiry developed, a certain amount of which resulted in business. The works are reported to have booked orders to the extent of five or six thousand tons, but at prices which in the case of the great proportion of most of the orders have not been disclosed, although it is known that, in some instances, £17 5s. f.o.b. for 24-gauge corrugated sheets in bundles was accepted by works anxious to secure orders.

Quotations: Pig Iron.

Cleveland No. 1, 115s.; No. 3, 105s.; No. 4 forge, 97s. 6d.; mottled, 95s.; basic, 100s.; hematite, mixed numbers, 104s.

Finished Iron and Steel.

Iron: Crown bars, £12; best bars and angles, £12 10s.; tees, £13. Steel: Billets, soft £9, hard £9 15s.; bars and angles, £9 10s.; tees, £10 10s.; joists and channels, £9 15s.; sheets, singles £13, doubles £13 10s.; battens, £14 5s.; plates, ship £10, boiler £14; rails, £10.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots, fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply, by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 17s. 6d. to 19s. per cwt.; cut steel nails, 3 in. to 6 in., clasp, in 2 ton lots, 19s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 22s. 6d. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 20s. 6d. per cwt. Bolts and nuts, 50 per cent. discount.

Oils and Paints.

Motor spirit, 1s. 7d. to 2s. 2d. in cases; linseed oil, 3s. 10d. to 4s. 2d.; gas engine oil, 2s. 7d.; machine oil, 2s.; separator oil, 4s. 9d.; colza (fine), 4s. 9d.; petroleum, 1s. 2d. gall.; paints, in 5 cwt. lots, 70s.; red lead, 12s. 6d.; white lead, 43s. 3d. to 51s. 6d.; zinc oxide, 40s. to 48s.; turpentine, 2s. 3d.

Petrol.

The price of petrol was reduced by 3½d. per gallon as from July 19, which makes the price of No. 1 grade spirit in tins 1s. 8½d., and of No. 3 1s. 6½d. per gallon.

Second-hand Machinery.

The market has not been very active this week. It appears to be getting duller and duller every day. The goods are unobtainable, hence the slowness of the market, said a prominent dealer this week. Not that we dealers are looking forward to more mines closing down, but it would nevertheless be a god-send to many. One big firm is full up with stock, but not of the right kind; articles no doubt that will be sold eventually, but not on what is called bread and butter lines. Battery spares still remain scarce, and, as previously stated, the mines have to fall back upon new stuff, which is a good thing for merchants having accumulated stocks on hand. So that the depression in the second hand machinery market does some good to the merchants with their new goods.

It is an established fact just now that the mines have come to their senses, and have allowed in many instances their engineers to look about for spare parts, which they purchase when opportunity occurs. One mine out east, said this important dealer, has had a man doing this sort of work for years, and there is no disguising the fact that he is saving his company thousands and thousands of pounds by attending the sales and picking up parts that will be useful to the mine from several mines which have already closed down. Of course, this is not a good thing for the dealer, as it takes the living out of his hands, but to the advantage of the companies. However, it is not unpleasing in view of the reduction in costs, which has been a big item to the companies during the past few years—firstly, the high wages that were insisted upon by the "gang," known as it, which forced the mines for higher wages, and who, in the majority of cases, were not worth much more than native labourers; and secondly, the ca' canny system of many of our miners that was in vogue, and which helped in several instances to close down several of our mines. It is to be hoped that this force has been broken, and that the mines' administration will continue to predominate. The lower costs of working all tend to bigger profits and unemployment. This important dealer hoped that shortly, when matters were more settled, there would be good business for all of us.

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Union Elevators.

Progress is being made in these. Mr Jagger at the S.A.P. Congress at Bloemfontein, said it was hoped that 17 large elevators would be ready by March next, together with the Capetown one, and that 17 smaller elevators would be ready before the next mealie season. The Durban elevator would, it is hoped, be ready before 1925.

Timber and Building Materials.

Timber prices are unaltered, but scantings at 10½d. remain very firm. Business, said a leading merchant this week, is quite good and stocks are satisfactory. The building trade is somewhat sluggish at the moment, but may receive a spurt at any moment. The prices of bricks and other building materials remain much about the same.

Blue Building and Plaster Lime.

Trade in this section has been steady, but without any sign of improvement, which cannot be expected owing to the conditions of things generally throughout the country. The heavy rains in the Cape have retarded operations there, but these have now abated, and with the slightly increased price of imported cement, lime sales may increase in that centre. Durban and district is very active with building operations, the chief demand being for dwelling houses. Unfortunately, owing to the cost of imported cement and the local prejudice, all mortar and plaster work is done with imported cement. This is found to be a great mistake, as walls plastered with mortar made up of blue lime and sand has been found to resist dampness and sea spray far better than cement plaster. It will therefore be seen that by propaganda work and continuous efforts on the part of lime manufacturers, a greater trade in blue lime may gradually come about. Builders are still complaining about the quality of some blue lime manufactured by antiquated methods. Such lime is found to be coarse and badly burnt, and it is only by those old-established works labelling their bags that contractors are able to discern the difference in the article in the first instance.

Second-hand Iron and Timber Yards.

These report no change. Prices for iron and timber are about 1d. to 5d., with little stock on hand.

Electrical Goods.

Dealers report this week very quiet times, with prices locally and oversea practically unchanged.

Local Quotations.

Linseed oil, 7s. 6d. per Imperial gallon; White lead, 70s.; Turpentine, 100s.; No. 8 galvanised wire, 100 lbs., 21s.; Porcupine, 25s. 6d.; Iowa, 12-gauge, 96 lbs. net, 21s.; standards, 14 lbs., 20s. a dozen; standards, 12 lbs., 18s. a dozen; droppers, 3s. 6d. a dozen.

Zinox.

This, a fine hydrated oxide of zinc paint, has recently been introduced to the South African market and has met with great success. Zinox, it is stated, with good grounds, is a white paint superior to white lead in durability, but free from the defects of the latter pigment. It is non-poisonous, covers well, works easily, and remains permanently whiter, being unaffected by the atmospheric gases which discolour white lead. This material is not at at all new, but has given satisfaction for ten years in Great Britain and the Colonies, and is bound to find favour in the Union.

Tenders Recently Recommended by Johannesburg Town Council.

The Brick and Potteries Co., Ltd.—70,000 hard blue building bricks, £280; Cawse and Malcolm, Ltd.—250 bed boards for natives, £325; Robert Hudson and Sons—150 tons 60 lb. Vignole rails, 500 pairs fish-plates and bolts, £2,737; Stewarts and Lloyds, Ltd.—100 fire hydrants, £209, 17,000 feet galvanised piping, £280; The Schoongezicht Collieries (Witbank) Ltd.—coal, nut and pea, for 12 months, £40,110; Sauler and Franks, Ltd.—24 200 amp. 6,000 volt high-tension single-phase oil switches, £438; Hume Pipe Co., Ltd.—4,334 ft. 30 in. concrete pipe, £2,708; The British Agencies, Ltd.—1,200 ¾ in. [illegible] disc water meters, £2,970.

Transvaal Silver Progress.

The latest report from the Transvaal Silver and Base Metals, Ltd., shows that an output of 1,158 long tons of silver-lead bullion was obtained from 15,158 tons treated. The estimated profit for the three months was £8,217. In comparison with the previous quarter's results the estimated profit shows a decrease of £8,3[illegible], due almost entirely to the lower price at which the output of lead and silver was calculated. The total expenditure on current development is included in working costs. The expenditure on capital account for the period amounted to £2,923 5s. 10d., of which £1,714 15s. 9d. represents the cost of shaft sinking and equipment, and £1,208 10s. 1d. is in respect of additions to the plant. The No. 1 shaft was sunk 72 feet to a total depth of 568 feet from surface, and a station and ore bin were completed at the plane of the 5th level. In view of the results obtained from stoping on the Boschfontein lode, it has been decided forthwith to resume shaft sinking at this point. The development footage accomplished during the three months was 1,269 feet. The footage sampled totalled 890 feet, and gave the following results:—Payable, 425 feet, averaging 13.7 per cent. lead and 12.5 ozs. silver per ton of ore over 38 inches. Unpayable, 465 feet, averaging 4.4 per cent. lead and 1.8 ozs. silver over 42 inches. Certain additions to the roasting and smelting plants, comprising a set of rolls for crushing the matte produced by the blast furnaces, a mechanical roasting furnace for preroasting the concentrates and matte, and a reverberatory furnace for separating the matte from the slag, are under construction at the present time. When completed and in use they will result in still further improving upon the extraction, and also will make it possible for the metals contained in the accumulated matte to be realised.

CITY OF PRETORIA 5 PER CENT. LOAN.—The list for this closes on August 31. It has already been over-subscribed and allotments will be made in proportion.

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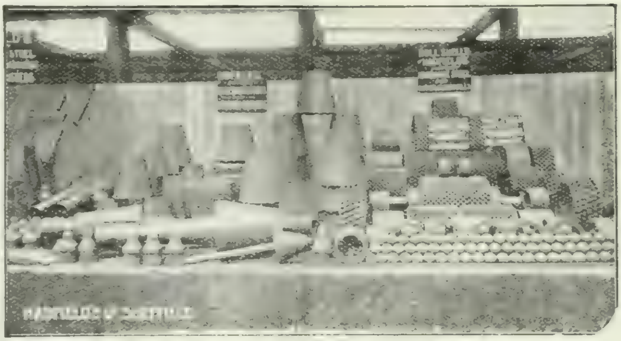

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SHIPS AND SHIPPING.

WHERE TRADE DOES NOT FOLLOW THE FLAG—POPULARISING THE PORT OF LONDON.

FROM A SPECIAL CORRESPONDENT.

LONDON, July 27.

Passengers for England from South Africa and particularly those sailing via the East Coast much dislike landing at Thames-side docks on account of the irksome, if short, railway journey to the Metropolis. The objection is also shared by Americans arriving on Atlantic boats using the Port of London; but in the case of the Atlantic Transport Line this irritating little train ride is now to be obviated.

When the new Minnewaska of 21,400 tons, the largest steamer sailing to and from London docks, enters the direct service to New York in a few weeks, a new feature in shipping services will be introduced. This will consist of a regular saloon motor service to convey passengers from King George V. Dock to destinations within a four mile radius of Charing Cross, and to places outside that area by special arrangement. Accommodation in these cars can be booked on board the steamer. A charge of 5s. per head will be made for a seat in one of the saloon cars, and those using the service can take two pieces of hand luggage with them in the car, leaving the remainder to be dealt with by the company's authorised agents. Westbound passengers can arrange for cars to take them direct from their hotels to the steamer on sailing day.

It remains to be seen whether the success of the experiment will justify its adoption by South African lines sailing from the Port of London.

America's Dwindling Carrying Trade.

Notwithstanding the tremendous increase in American tonnage and the freely admitted determination of the United States Government to build up a mercantile marine sufficiently strong to compete all along the world's trade routes, there is undeniable evidence that American ships are carrying a steadily decreasing proportion of the nation's foreign trade.

The United States Department of Commerce figures for the first four months of 1923 show a steady decline in the share of American ships in American trade. The percentage of American trade carried in American bottoms dropped from 36.13 in January to 34.92 in February, 32.50 in March, and 31.48 in April. There is also evidence, it is stated, that privately-owned American vessels are losing in competition with the Shipping Board's tonnage, and this condition will be accentuated if direct operation of its ships is resorted to by the Government. Direct Government operation, the statement concludes, cannot solve the problem of enabling United States ships to compete for their own trade, and Congress must be looked to to offset the advantages in favour of foreigners, if a real American merchant marine is to survive. Figures are quoted to show that while during the first four months of 1922 foreign vessels carried half a billion dollars worth more of American trade than was transported in American ships, in the first months of 1923 the foreign lead was increased to more than 750,000,000 dollars.

Upon examining the records of the Bureau of Research of the Shipping Board, covering the first four months of 1922 and 1923, it is found that the Board's vessels carried, in the overseas trade, during the 1923 period, 2,705,000 tons, as compared with 2,801,000 tons in the 1922 period, a loss of 4 per cent. The total for private American vessels, however, decreased from 946,000 to 748,000 tons, a decrease of 21 per cent. For British ships, on the other hand, the total cargoes carried increased from 4,022,000 to 4,799,000 tons, a gain of 19 per cent., while other foreign ships showed an advance of 28 per cent.

Barratry.

Barratry—the crime in Maritime Law of fraud or gross negligence by master or crew to the prejudice of the ship's owners—figures in a case which came before the Admiralty Court at Seville this week.

Briefly, the steamship [illegible], of [illegible], insured for 74,000, was wrecked on October 19, 1921, at Larache. The insurance company charged the owner and the captain with barratry, alleging that the [illegible] was loaded with cases of stones instead of merchandise and casks of water instead of oil. The Court sat on Friday and the prosecutor asked for penalties of eighteen years' imprisonment on the accused and a fine of 620,000 pesetas for fraud and ten years' imprisonment and a fine of 62,000 pesetas for barratry, a sum of 130,000 pesetas to indemnify the owners for the cargo, and finally a fine of 10,000 pesetas for false declaration. Witnesses declared the leaks were sprung on the [illegible] by exploding dynamite, and that the sea cocks were opened. Judgment has not yet been given.

Costly Lure of High Wages.

The lure of high wages in the United States is causing British shipowners considerable anxiety and expense. Crews are signed on at either Liverpool or Southampton, whichever is the home port of the line, for the round voyage and at the rate of wages fixed by Board of Trade articles. The White Star and Cunard Lines are finding, however, that as soon as their vessels reach New York large numbers of firemen and engine room hands are attracted to American ships by offers of higher pay. The Aquitania, Berengaria and Tyrrhenia of the Cunard Line and the Homeric, Olympic, Majestic and Adriatic of the White Star Company have all been heavy sufferers in this respect. The Berengaria had to engage ten substitutes before leaving New York on her last trip, and the cost of sending them back to America as third class passengers from Southampton amounted to over £172.

In the case of the Adriatic [illegible] members of her crew walked ashore with their kit and refused to work the ship from New York unless promised by the captain in writing a bonus of £5 each as additional pay for extra work which would be put upon them because 21 members of the crew had deserted. This demand, which the captain was forced to accede, worked out at 6s. 3d. per hour for the firemen and 5s. 3d. for trimmers, as against the normal rate for overtime of 1s. 3d. per hour in each case.

When the United States Lines' steamer Leviathan arrived at Southampton a few days ago over 80 of her crew consisted of deserters from the British ships mentioned. Proceedings were taken against 25, and in one case, which was taken to regulate the others, the Bench decided that the defendant should forfeit the wages due to him on the Berengaria. They would not, however, agree to the prosecutor's suggestion that the men should pay the cost of returning the substitutes to New York, or that imprisonment should be imposed in addition to a fine. The prosecutor thereupon asked for a case to be stated on these points, and that, pending a decision, the whole of the remaining cases, including those of the White Star Line, should be suspended *sine die*. This the Bench agreed to.

The case of the Adriatic was heard at Liverpool. Seventy-eight members of the crew were charged with combining to impede the ship's voyage, and in each case a fine of £2 was imposed.

Fewer Sailing Ships.

According to authenticated figures, the reduction in sailing tonnage since pre-war days, say, June, 1914, amounts to about 1,150,000 tons. The present percentage

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of sailing vessels to the world's total tonnage is less than 1½. Of the world's sailing tonnage 1,260,000 tons equal to 44½ per cent. of the tonnage are now owned in the United States, and the other countries which still have a considerable amount of sailing tonnage are:—France, 284,000 tons; Norway, 176,000 tons; Great Britain and Ireland, 166,000 tons; and Italy, 153,000 tons.

Australia and the Far Eastern Trade.

Although South Africa has no direct interest in Australia's proposed subsidised service to the Far East, developments in that direction will no doubt be closely watched.

Following the recent announcement by the Commonwealth Government that it would grant a shipping subsidy immediately the reasonable requirements of exporters could be ascertained, the Board of Trade of Australia has appointed a Committee to enquire into the question. This body is now inviting suggestions from merchants in the Eastern trade, from Chambers of Commerce throughout the Commonwealth. At present the Committee is considering three definite proposals: (1) A direct service to Hong-kong, Shanghai, and Tien-tsin, with provision for cold storage accommodation at reasonable competitive rates of freight, an equitable allotment, and a clean bill of lading; (2) a direct service to Colombo, Madras, and Bombay on the same conditions; (3) a direct service to Singapore, Bangkok, Rangoon, and Calcutta on the same conditions.

Private shipping companies at present trading along these routes will not regard the latest Australian venture with too favourable an eye; for it is obvious that the present tonnage available for freight is more than able to cope with the volume of trade. The Commonwealth Minister for Trade and Customs suggests that the Government are mainly influenced by a desire to effectively assist the Eastern trade while refraining from taking any part in the business arrangements. He adds that they want to take no action which may be construed as Government interference with private enterprise. It is obvious, however, that this subsidised service can only be operated at the expense of vessels which have maintained it up to the present without recourse to public funds.

BRITISH ENGINEERING STANDARDS ASSOCIATION.

The following list of B.E.S. Specification have recently been published by the B.E.S.A.:—

No. 117, B.S.S., for drum starters for electric motors.
No. 118, B.S.S., for drum controllers and resistances for use therewith (for electric motors).
No. 123, B.S.S., for face plate controllers and resistances for use therewith (for electric motors).
No. 124, B.S.S., for totally enclosed air-break switches for voltages not exceeding 660 volts.
No. 126, B.S.S., for flame-proof air-break switches for voltages not exceeding 660 volts.
No. 127, B.S.S., for flame-proof air-circuit breakers for voltages not exceeding 660 volts.
No. 129, B.S.S., for contactor controllers and resistances for use therewith (for electric motors).
No. 130, B.S.S., for totally enclosed air-break circuit breakers (for voltages not exceeding 660 volts).
No. 140, B.S.S., for liquid starters for electric motors.
No. 167, B.S.S., for auto-transformer starters (hand operated pattern for electric motors).
No. 155, B.S.S., for contactor starters for electric motors.
No. 141, B.S.S., for switch starters (star-delta and series parallel for electric motors).
No. 147, B.S.S., for multiple switch starters for electric motors.

The above were all published in May and June, 1923

Witbank Colliery Dividend.

A dividend of 10 per cent., equal to 2s. per share, has been declared by the directors of the Witbank Colliery for the period ended August 31, to shareholders registered at that date.

LATEST RHODESIAN SHARE PRICES.

The following are the latest share prices as advised from London by the last mail:—

Authorised Capital	Share Issued in Bracket	Price
350,000	Bechuanaland 10/- (601,773)	6/- — 7/-
1,500,000	British Cent. Africa (1,408,000)	2/6 — 3/
9,000,000	British South Africa (8,937,533)	12/10½—13/1½
400,000	Bwana M'Kubwa 5/-, 4/6 pd. (901,053)	4/9 — 5/3
725,000	Cam and Motor (604,235)	41/10½—43/1½
250,000	Charterland and General 5/- (655,251)	9/3 — 9/9
148,300	Chicago Gaika 10/- (198,600)	5/- — 6/-
75,000	Crescens 10/- sh. (145,420)	8/- — 9/-
500,000	Eileen Alannah (390,768)	1/9 — 2/3
375,000	Exploring Land 5/- (1,101,220)	5/3 — 6/3
600,000	Falcon Mines (400,000)	6/- — 6/6
300,000	Gaika (273,495)	15/- —16/-
200,000	Globe and Phoenix, 5/- sh.	13/- —14/-
1,742,890	Gold Fields Rhodesian, 10/- (2,514,220)	5/9 — 6/3
56,250	Jumbo 1/6 sh. (650,000)	1/- — 1/3
75,000	Lomah (Rhodesia) 5/- (257,052)	1/6 — 2/
600,000	London and Rhodesian, 5/- (2,385,885)	5/9 — 6/3
325,000	Lonely Reef (271,007)	27/6 —30/-
350,001	Mashonaland Agency, 7/6 (550,453)	3/6 — 4/6
300,000	Mashonaland Con. 1/- (1,173,270)	0/3 — 0/6
350,000	Mayo (276,305)	2/6 — 3/9
120,000	New Rhodesian Mines, 2/6 (213,729)	1/6 — 2/
500,000	North Charterland, 10/- (588,336)	2/- — 3/-
475,000	Planet Arcturus	0/6 — 1/6
150,000	Rezende Mines	53/9 —56/3
1,000,000	Rhodesia Broken Hill, 5/- (2,212,461)	4/9 — 5/3
700,000	Rhodesia Consd. 4/- (1,194,800)	1/- — 1/6
241,555	Rhodesia Copper 3/- (1,173,405)	2/3 — 2/9
600,000	Rhodesia Expl'n 3/- (3,867,957)	1/- — 1/3
600,000	Shamva Mines	28/9 —31/3
2.200,000	Tanganyika ord. (2,190,060)	16/9 —17/9
750,000	Tanganyika pref.	20/- —21/-
300,000	Tati 15/- sh. (393,532)	6/- — 7/-
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The Platinum Discoveries—Nile-Congo Divide Syndicate—Manufacturing Carbide on the Witwatersrand—Rock Temperatures—Progressive Benoni.

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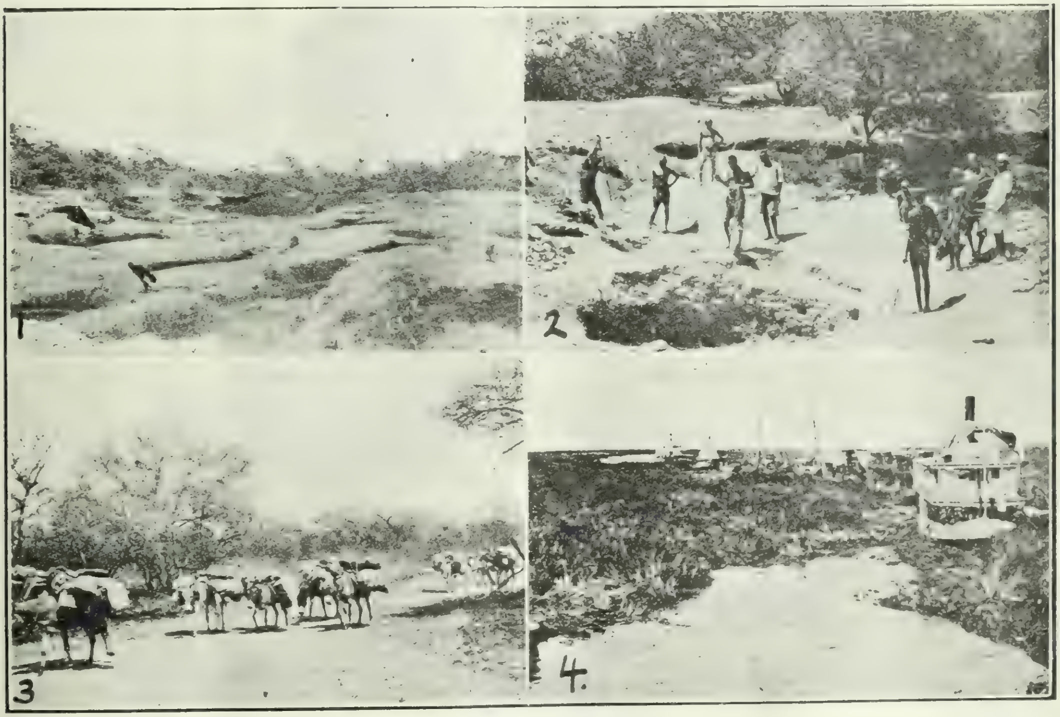
Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, SEPTEMBER 1, 1923 No. 1666

Opening up a New African Mineral Field.



The Tanganyika Concessions, Ltd., which was the pioneer prospecting enterprise in the development of Congo copper, has, within the past year or two, commenced the exploitation of a very extensive mineralised belt in the Sudan. The work is being undertaken by a concern styled the Nile-Congo Divide Syndicate, and at the meeting of Tanganyika Concessions, held in London the other day, Mr. Robert Williams gave some interesting particulars regarding this new "watershed" enterprise. Portions of Mr. Williams's speech are dealt with in this issue. The four photos reproduced above are from Major Cuthbert Christy's paper, which appeared in a recent number of the Royal Geographical Society's Journal, and they illustrate some aspects of prospecting and transport in this new African mineral field: (1) Old copper workings, Hofrat El Nahas; (2) Opening up an old shaft, Hofrat El Nahas; (3) Donkey transport, Bahr El Ghazal; (4) River transport amidst Sudd Bahr El Ghazal.

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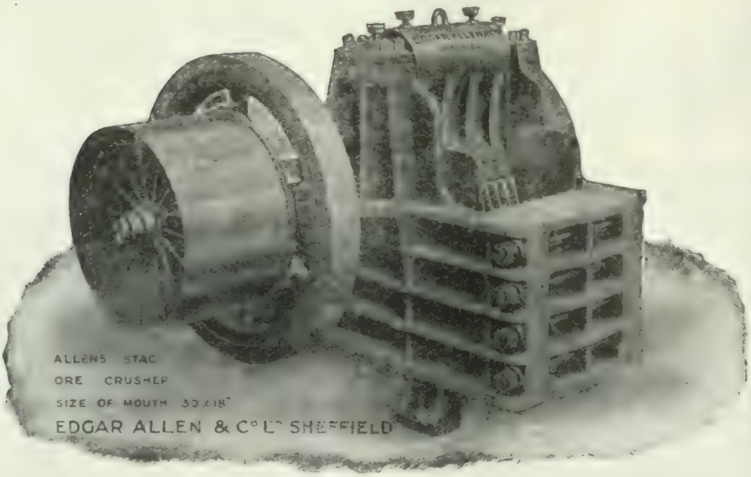

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Platinum in the Waterberg.

MR. MAX BAUMANN'S REPORT—WHAT IS A PLATINOID ?—THE QUESTION OF VALUES.

A report on the property of the Transvaal Platinum, Ltd., dated " August, 1923," signed by Mr. Max Baumann, Mining Engineer, reached this office last week shortly before we went to press, and too late to be dealt with in our last week's issue except in the form of a brief note. To that note we have nothing to add in so far as Mr. Baumann's references to comments on platinum which recently have appeared in this journal are concerned. But in justice to the Transvaal Platinum, Ltd., and to Mr. Baumann, we are now glad to be able to publish extracts from the report. In doing this and in venturing to make one or two remarks on Mr. Baumann's statements, we wish to make it perfectly clear that we are not actuated by the slightest feelings of animosity towards either the Transvaal Platinum, Ltd., or Mr. Baumann. On the contrary, we most sincerely hope that this enterprise will succeed in the establishment of an extensive and profitable platinum field which will add still further lustre to the wonderful and diversified records of the mineral wealth of the Union of South Africa. But at the same time we have felt bound to point out that the history of platinum seeking in South Africa to date has resulted in much disappointment and considerable loss of money, and that although platinum, where it occurs in sufficient quantities and in a form which renders its recovery comparatively easy, is admittedly a highly profitable mineral element to work, it would appear that a large number of platinum ventures in this and other countries has for a variety of reasons not proved remunerative to those who have sunk money in the enterprises, and especially so in the case of those who have purchased shares at a substantial premium.

The Engineer's Report.

Mr. Baumann, in the course of his report, states:

The company holds prospecting contracts and options over the whole or portions of the farms Rietfontein 1638, Rietfontein No. 3, Welgevonden 1772, Doornhoek 896, Kromkloof 1637, Geelhoutkloof 2122, Magalakynsoog 381, Zuikerboschfontein 1015, and Doornkom 1807, on which farms the outcrop of the lode has been traced at surface or is believed to exist.

Geological.

The platinum is found in a lode formed on a fault plane in the felsite of the bushveld complex, the red granite of the bushveld running roughly parallel to and at some distance south of this fault plane. The lode matter consists of a filling of brecciated quartz with angular inclusions of felsite. Oxide of iron in the form of specular iron and a highly ferruginous silicate are the principal accessory minerals. The width of the lode varies from a foot up to 30 feet; in places the lode is split into two or three bodies separated by varying widths of felsite. The strike of the lode is roughly east and west, but varies slightly in this respect. Not enough work has yet been done to determine the dip, but this would appear to be very nearly vertical. The outcrop can be followed continuously on the surface for a distance of over 3,000 yards from Rietfontein 1638 over Rietfontein 3, into Welgevonden, and from there westwards it can be picked up at intervals over the remainder of the area under your control, the total distance on the strike over which this lode is believed to exist being roughly 20 miles.

As regards the prospecting to date, attention so far has only been given to the farms Doornhoek, Welgevonden and Rietfontein 3. At Doornhoek, a number of trenches have been put across the lode over a distance along the strike of about 2,000 feet. The lode is 30 feet and more in width in this area. Samples were taken in sections of 24in. across the lode and panned. So far the values obtained have been very low, but to prove the presence of platinum, the concentrates obtained by panning the above samples were submitted to assay and gave: (1) weight of concentrates 16·9 grammes value 101·0 ozs. platinoids per ton of concentrates; (2) weight of concentrates 125·1 grammes value 19·2 dwts. platinoids per ton of concentrates. The best individual assay at Doornhoek was 0·5 dwts. platinum per ton of ore. Better results were obtained in the Welgevonden area. Here a specially selected piece of loose rock (taken from near the outcrop) gave an assay, platinum 107·0 ounces per ton, iridium 13·0 ounces per ton. This was an admittedly selected specimen in which the metal was visible. A very large number of samples have been panned and a percentage of these have been submitted to Messrs. Littlejohn and Whitby for assay, their results being checked in several instances by duplicate assays performed by the Standard Bank. A summary of these results is given herewith, but it should be noted that in cases where no widths are mentioned, the assay was generally of a portion of the lode taken for panning before the width of the outcrop had been determined

Platinum and Platinoids.

Mr. Baumann then states values varying from traces to 144·5 "dwts." platinoids "per ton of ore" over from 9 to 20 inches of lode width and a sample No. 26 at 4·58 grams panning concentrates, which gave 117·4 dwts. "platinoids" per ton of ore. In connection with these results we venture to ask if the word "platinoid" has any definite economic or chemical value. What is a platinoid? According to the Standard Dictionary of the English Language the noun platinoid has two meanings, namely: (1) An alloy of German silver and 1 or 2 per cent. of tungsten, used in the manufacture of resistance coils and other electrical appliances. (2) A platinum metal. Presumably Mr. Baumann's report is concerned with the word in its second interpretation, and we should like to know what the actual or even approximate value of a platinoid is in terms of some familiar currency such as sterling or dollars per ounce or per pennyweight, and also how a platinoid is converted into platinum and what this operation would cost.

Mr. Baumann continues: In conclusion, I would point out that the occurrence of platinum on your property is unique in that the metal occurs in a siliceous lode in acid country rock (felsite). As stated above, 99 per cent. of the world's output of platinum has come from placers, and of the balance the platinum has always been found in rocks of a basic and ultra basic type; to the best of my information there is only one recorded instance in Nevada of platinum occurring in acid rock. The occurrence on your property is therefore an entirely new one, and previous experience is absent to guide us.

The final portion of the report is more concerned with platitudes than platinoids. Mr Baumann says "much work will have to be done before sufficient knowledge is gained to enable the property to be tackled in the most efficient and economical manner and to prove its value. Evidence to date is that values are rather erratic, and there will no doubt be big stretches in which the average metal content will be too low for profitable working. In view of the width of the lode and its persistency in strike, it is not unreasonable to assume that there will be persistency in depth, and although the lode has not yet been sunk on there is nothing to show that the very high values obtained are confined to the surface due to secondary enrichment."

Platinum a Precious Metal.

Platinum has been proclaimed a precious metal in the Transvaal under the Precious and Base Metals Act of 1908.

Platinum: A Warning.

UNITED STATES GOVERNMENT ISSUES IMPORTANT STATEMENT.

By an interesting coincidence, just at a time when public interest in this country is again being turned to platinum, the following official statement comes to us by this mail from the United States Bureau of Mines, Washington. It speaks for itself.

Warning to the public to scrutinise carefully offers of stock in so-called platinum producing companies proffered by unscrupulous promoters is given by the Department of the Interior through the Bureau of Mines. Although the United States, from widely scattered sources, produces only a few hundred ounces of platinum a year, certain promoters have made extremely fanciful announcements regarding properties claimed to contain platinum in commercial quantities. These promoters bolster their claims by the display of fictitious assays which in some instances have reported values as high as $25,000 worth of platinum to the ton. In one instance, the assertion was made that a property near Yonkers, N.Y., contained 10,000,000 tons of rock bearing precious metal values ranging from $200 to $600 per ton, a mere bagatelle of from two to four billion dollars! In the case of a Seattle, Wash., concern, the possession of ore containing platinum and gold "in astonishing quantities" was heralded, while the location of the deposit was kept secret in order to forestall a "mad rush." Numerous samples of alleged platinum-bearing ores from various properties examined by assayers of the Bureau of Mines at Reno, Nevada, have failed to disclose the presence of platinum in appreciable quantities. In some instances, definite evidence has been obtained of the "salting" of samples with platinum wire and foil.

Big Rise in Price of Platinum.

During the past few years possible domestic resources of platinum have attracted much attention. On account of the extensive use of platinum during the World War, and the practical elimination of the Russian supply, the price of this metal rose to new high levels, and though it since receded to some extent, the price is now nearly six times that of gold. Whereas in 1913 the average price of platinum was $45 per ounce, in 1923 the price is approximately $118. This condition has not only greatly stimulated search for platinum in the United States, but has also offered an opportunity for fraudulent promotions, which has not been overlooked by those ever on the alert with promotion schemes.

In addition to the economic causes—namely, the excessive demand, partly due to new uses, particularly for jewellery; the increase in price, and the very limited domestic supply—there are also certain technical factors that must be considered. The correct determinations of platinum in small quantities is by no means simple. As the methods employed are usually those of fire assay, similar to those used for gold and silver, the prospector or others would naturally seek custom assayers for the determination of platinum. In general, all reputable assayers are capable of making platinum determinations. Incorrect platinum returns have been made by chemists who choose to employ fanciful methods. The result of these conditions is that during the past few years there has been an increase in the number of assayers turning out erroneous platinum returns resulting in a number of promotions doomed to failure. It may be added that the mistakes have nearly always been in the direction of too high a platinum content.

In normal times, Russia is the greatest producer of platinum, the annual output amounting to over 300,000 ounces, equal to 90 per cent. of the world's total. This is all recovered by dredging or hand-washing methods. Although Colombia, South America, now produces close to 30,000 ounces of platinum yearly, not an ounce comes from ore rock in place, all being recovered by dredging or hand washing methods.

The State and Platinum Promotions.

The growing seriousness of the situation created by unscrupulous promoters of alleged platinum producing properties has suggested to various State mining officials in the Western States the necessity of taking some action to protect the public. Legal prosecution has been considered but not hitherto employed, owing to the lack of sufficient laws to reach the cases, also to the difficulty of securing evidence of the necessary character. Legislative relief has been considered in the form of a law requiring the licensing and examination of assayers, and the so-called "blue sky" laws have also been considered as a possible remedy. Little or no progress has been made toward the eradication of the evil. The Bureau of Mines advises persons who are asked to speculate in a platinum property to let it alone unless the purchaser is prepared to go to the expense of a careful examination by a competent engineer.

Langlaagte Estate Accident.

A serious accident occurred in the Block "B" Shaft of the Langlaagte Estate during the week owing to an attachment between the rope and the cage failing. Some 20 natives in the skip were precipitated down the shaft and sustained various injuries, more or less serious. An inquiry is being held into the cause of the accident.

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Platinum Occurrences.

THE WATERBERG DISCOVERY: AN EXPERT'S OPINION.

By L. Heymann, Ph.D., Consulting Chemist and Metallurgist.

We are glad to be able to print the following contribution from Dr. L. Heymann, who probably has had more practical experience of platinum than anyone else in this country. It is only fair to state that in Mr. M. Baumann's report he refers to an occurrence of platinum of a higher value than 1 dwt. per ton, mentioned by Dr. Heymann below.

Platinum was discovered in 1755 in the gold containing river-sand of the River Pints in Columbia. In 1819 platinum was discovered in the Urals, but the regular recovery of the metal commenced only in 1824 in the Nijne Tagilsk district. Between 1824-1845 the Russian Government minted coins out of platinum (value 3, 6 and 12 roubles). At the time the price of platinum was below that of gold. When the minting ceased the recovery of the metal fell considerably. It was only after 1860, when with the growing demand for platinum for industrial and technical purposes the output of the metal increased rapidly. The greatest amount of platinum recovered in the Urals per year was about six tons. The average yearly recovery is about two tons, which is 95 per cent. of the world's output. Platinum is chiefly found and recovered from alluvial deposits, where it is present as a metallic alloy of platinum (70 per cent. to 86 per cent.) and iron (8 per cent. to 18 per cent.), with small amounts of osmium, iridium, ruthenium, palladium, rhodium and copper. The largest nugget of platinum found in the Urals weighed 23 lbs. The primary rock or "mother rock" is dunite. The platinum is distributed in the mother rock in such small quantities that its recovery on a commercial basis was unpayable. The same conditions prevail in other places as, for instance, in Columbia. However, in the Urals there were found a few enriched deposits of platinum in the primary rock; they were called "nests," and contained a large amount of chrome-iron. Such occurrences were not of a regular nature, and the discovery of the "nests" was a matter of chance. These rare occurrences were generally worked by small syndicates. The output of platinum from these enriched deposits was infinitesimal as compared with the output from the alluvials. In the Urals there are about a score of such worked-out rich deposits in the dunite-massive of the Nijne-Tagilsk district. Strangely enough, there was not a single rich deposit discovered in the primary rock of the Isovsky district, though the alluvial deposits of that district are very rich. The average contents of platinum in some of the mines are as high as 36 dwts. per ton. When I was in Siberia (1917-1920) very important research work was carried out by the Government's chief geologist, Tocareff, in order to find a suitable and payable method of extracting platinum from the primary rock. In a letter which I have received from him recently he wrote that the results of his research work were so far disappointing. A most interesting fact is mentioned by him in the same letter, namely, that on the western slopes of the Ural Mountains platinum was found in sedimentary deposits, in conglomerates of sands of the permo-carboniferous era. This extraordinary occurrence is quite outstanding, but very little work has been done in this district so far.

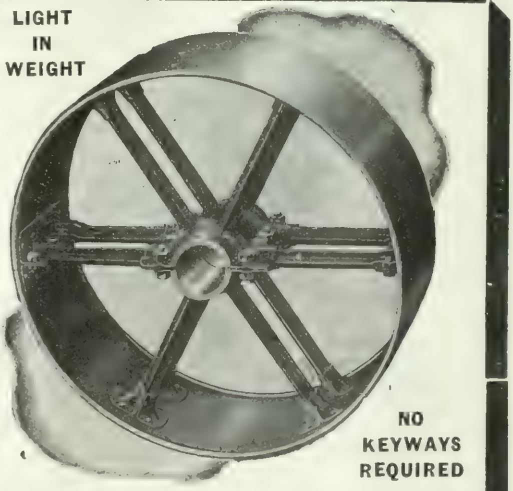
As I have already mentioned, the primary rock of the platinum deposits in the Urals is dunite—an ultra basic olivine rock, the whole formation being surrounded by a belt of gabro-diorite. The alluvial deposits are generally found either in regions of serpentinised peridotite, or rivers draining the area of the eruptive rocks.

The Waterberg Discoveries.

As regards the recent discovery of platinum in the Waterberg district, it is too early to pass a definite opinion. There are some favourable geological indications, *i.e.*, similar to the Urals, for instance we find a belt of gabro-norite surrounding the district, where platinum was supposed to be discovered; further in the same district we find a lot of chrome iron deposits and many samples of the chrome iron contain platinum. The highest amount found is 1 dwt. per ton, commercially unworkable, but sufficient as an indication. The new belt seems to contain the platinum in a brecciated reef zone, while in the Urals it is present in the primary rock as an irregular magmatic segregation. Though the assay results published are reassuring, yet it is impossible at present to foretell whether or not the new venture will turn out a success, as much more exploratory work remains to be done.

East Griqualand Coal.

For the past six months Captain H. H. Bunn, a retired East Griqualand magistrate, has been at work prospecting on the immense coal area in the Mount Frere district, 60 miles from Kokstad. With the assistance of Mr. R. Matheson, a Scottish coal miner of lifelong experience, Captain Bunn is now carrying out the recommendations of Mr. Woodburn, mining and consulting engineer and coal expert, Johannesburg, who went over the area in October of last year. If the final reports of the experts are considered satisfactory, a limited liability company is to be formed in South Africa, for the purpose of developing this coal area, and within the next two months it is expected the prospectus will be issued.



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Tanganyika Concessions.

CARRYING THE MINING INDUSTRY FORWARDS TO THE NEXT GREAT WATERSHED—THE MINERAL WEALTH OF KATANGA—MR. ROBERT WILLIAMS'S GREAT WORK.

Few men have more deeply set the seal of achievement upon a continent than has Robert Williams. It can in fact be asserted that, with the exception of his great master, Rhodes, no man has done so much to open up Africa and to expand trade and industry and the prestige of the British race. He has proved himself the moving spirit in the development of the Congo Copper Industry, the forging of lines of communication, all of which centre on Katanga and radiate coastwards north, south, east and west; and he is now engaged in the development of another branch of the mineral industry between the Equator and the Mediterranean, where the Tanganyika Concessions, Ltd., is prospecting a vast area in the Sudan.

This latter company, which rejoices in the somewhat geographically inaccurate name of Tanganyika Concessions and its associated concern, Zambesi Minerals, has been the pioneer enterprise in the development and expansion of the Congo and of South Central Africa, and it is now initiating a work in North Central Africa which may constitute yet another watershed link in the connection of Capetown with Cairo by a continuous rail and water line. For as Mr. Williams has pointed out, it is the concentration of mineral wealth in the watersheds of Africa—the Witwatersrand, and the watershed copper deposits of the Congo-Zambesi watershed—which have proved the central dominating factors in the opening up of Africa, and now perhaps yet another watershed, the Nile-Congo, where a syndicate of that name is operating for gold and copper mines, will continue the process of development further north. Mr. Robert Williams has justly earned for himself the title of King of the African Watersheds, and whilst others have gained fame and titles for doing comparatively little, the long-sighted and level-headed Scotsman, who has thought and schemed in terms of a whole continent, has remained plain Mr. Robert Williams. He will, nevertheless, always be generally recognised as a man who has been able to wear the mantle of Cecil John Rhodes as no one has been able to do.

Some insight into the far-flung activities of the concern with which Mr. Williams is so intimately associated is afforded in the speeches made by him at the annual meetings of Tanganyika Concessions and Zambesi Minerals which were held in London recently. Mr. Williams' remarks, considered in conjunction with the speech made by Mr. Jean Jadot at the meeting of the Union Miniere, held in Brussels, enable one to appreciate the vast work that is in progress in the heart of Africa and to sense the immense possibilities of all this development, not only in regard to the actual winning of minerals, but all that the development of a mineral industry means in the direction of railway building and the populating of the higher portions of the great Central African plateau with Europeans. At the Tanganyika meetings the new chairman of the company, Sir Reginald Wingate, the late Sirdar of the Sudan, and another distinguished builder up of British prestige and civilisation in Africa, after making some introductory remarks, called upon Mr. Williams, fresh from his African journeyings, to address the meeting, and in the course of his remarks Mr. Williams said:—

Value of Union Miniere Shares.

Your holding in the Union Miniere du Haut Katanga is shown as increased to 103,018 capital shares and 78,000 dividend shares, which at the market value and with the exchange ruling on December 31, 1922, represented £4,420,564, showing a surplus of £3,578,091 over the amount at which they are entered in the accounts. You will therefore see that all your shares and Debentures in other companies are covered by the value of the shares in the Union Miniere. The total gross working results of the Union Miniere for 1922 amounted to about 48,000,000 francs. After charging interest on Debentures, etc., and providing for substantial amortisations, that company was able to declare a dividend of 35 frs., less deduction of 2.80 frs. per share for Belgian taxation. The proceeds of this dividend will appear in the next accounts. The position of the Belgian exchange, as you will understand, greatly affects our company. The dividend from the Union Minière, taking at the ruling exchange of about 96 francs to the £, will only realise about £60,000; if the exchange had been about 50 it would have realised £116,591, and at the normal rate £233,188.

The operations of the Union Miniere for the year 1922 were very satisfactory, the total production being 43,362 tons of copper. Unfortunately, the price of copper touched the lowest figure recorded since 1914, namely, 57, and the highest price during 1922 was £66. During the first half of this year, the production has been 24,528 tons. The output for June of 4,810 tons is the highest monthly output yet obtained. A reverberatory furnace capable of producing 6,000 tons of metal is now under construction, and should be in operation at an early date. The leaching test plant during the first five months of 1923 had produced 411 metric tons of electro-cathodes. The total production of this plant for 1922 was 663 tons. The results of the test working of this plant has fully demonstrated that this process of treatment for all Katanga ores is most successful, and Mr. Wheeler, the consulting engineer, and his staff are now engaged in getting out detail estimates and designs for a 30,000 tons per annum plant, to be operated by steam power, pending the completion of the large water power schemes.

In 1902 I said I believed the Katanga copper belt would ultimately produce 1,000 tons of copper per day, if everything that makes for economical working were brought to bear, particularly cheap transport to the coast and Europe. Since I have visited the copper belt this time I am more than ever confirmed in this opinion. I had long formed the opinion that the so-called mines discovered over 250 miles of Katanga had probably originally been glaring green carbonate outcrops which had attracted the natives, who had probably found enough ore without bothering to explore for extensions underground, and that in all probability what we had discovered was one continuous reef which would be found as rich underground, where it had no outcrop, as where the natives had worked it. I advised George Grey and every engineer we sent to Katanga to prospect on those lines. This view was confirmed by Mr. Farrell, the first American mining engineer I sent out to report on these deposits, and it was further confirmed by the discovery of ore at Kambove adits, and the discovery last year at Ruashi mine of 5,000,000 tons of ore containing 500,000 tons of copper, 1,500,000 tons of which is direct smelting 19·3 per cent. ore. Further drilling is proving ore all the way between Ruashi and the Star, and beyond the Star, and all where nothing outcropped. At Luushia the extension of that mine has been proved for miles on either side. But what shows the continuity of this great copper belt most of all is the western section of it, which I had never seen before. I travelled over 120 miles of it. Unlike the eastern section, where the wealth is mostly under surface level, that of the western section is chiefly above surface level. It stands up in bold hills, the geological formation of which is the same as the eastern section, with the same ore, with slight variations as to value. You can stand at Ruwe mine, as I did, and see these bare hills of copper standing out of a sea of forest country, marking the line of the great copper reef, with faults here and there, right [illegible] to Fungurume. I [illegible] along the Fungurume mine and its extension for about 20 miles. The highest point of this range is [illegible] feet above the local river level.

Enormous Copper Deposits.

I went over most of these hills of copper accompanied by Mr. [illegible], the mining engineer of the Union Minière, who knew them all, and estimated ores that had been proved by various surface trenches and drills. In one part of the 20 miles at Fungurume, 9,000,000 tons of ore had been proved. At Musonoi there is a group of mines within 1,100 miles by rail of Lobito Bay, in which millions of tons of ore have already been proved to exist. At Ruwe Mine, in this group, £100,000 in gold has already been extracted. Gold, platinum, palladium, vanadium and copper exist there. The existence of large supplies of cobalt and uranium ores has also been proved in the eastern section. About ten miles out of the 250 miles of this copper belt has given a development of 68,000,000 tons of ore, containing about 4,500,000 tons of metallic copper. These ten miles represent operating mines and proved bodies of ore over the whole 250 miles. If ten miles has given 4,500,000 tons of metal, 40,000,000 tons of copper is a very conservative estimate for the whole 250 miles. I believe that the real policy for the Union Minière to pursue is to go ahead with all processes and try to perfect them all as they proceed.

I also visited the radium deposit at Chinkolobwe, and the development work done there has already proved the existence of a sufficient quantity of rich ore to supply the radium works at Oolen for a long period. Since January, 1923, the plant has been producing radium commercially on a scale sufficient to cover amply the requirements of the whole world. This new industry is now well established, and is running under very satisfactory conditions, entirely in conformity with our expectations. The production of cassiterite during 1922 amounted to 670 tons, and during the first five months of 1923 it amounted to 302 tons. It is intended to increase the monthly output to about 80 tons in the near future. This cassiterite is of high grade, and frequently reaches 72 to 74 per cent. tin, and the resulting metal is of very high quality. A new tin factory is now in operation at Hoboken for the treatment of the Katanga ores. As the result of tests on the cobalt alloys made at the Lubumbashi smelters last year, an electric furnace is now under construction in Katanga for the production of high-grade cobalt alloy. This alloy will be exported to Belgium and a treatment plant for this material will be installed at the Oolen works. The Luena collieries in Katanga, which I also visited, have reached the stage of regular production, and produced during the year 1922 about 30,000 tons of coal, and there is reason to hope that this production will be doubled during 1923.

The Lobito Bay Line.

The Benguella Railway continues to bear out all that has been previously said and written in regard to its potential earning powers. The traffic on the present open section of the line from Lobito to Chinguar—a distance of 519 kilometres—continues to show the marked and substantial increases which have been taking place year by year. The number of passengers carried in 1922 was 192,300, against 159,045 in 1921, an increase of 33,255. The tonnage of goods transported by the railway during the same period was 158,800 tons in 1922, against 124,275 in 1921, an increase of 34,525 tons. The gross receipts for 1922 amounted to 6,917,819 escudos, and working expenses to 3,508,527 escudos, which leaves a surplus for 1922 of receipts over expenditure of 3,409,292 escudos, which, at the average rate of exchange during 1922 of 60 escudos to the £ sterling, represented £56,800.

The extension of the railway from Chinguar to Silva Porto, a distance of 610 kilometres from Lobito Bay, will open up a large and productive area on the Benguella Plateau, and I have no hesitation in saying that the increases in traffic carried will not only continue, but will show still further improvement. Although substantial increases in traffic are being shown year by year, the sterling value of the net earnings does not increase to the same extent. This cannot, however, be attributed to the Benguella Railway or the Province of Angola, but is entirely due to the unsettled state of Europe resulting in unstable foreign exchanges and the consequent dislocation of the world's markets. In connection with the unstable rates of exchange, the railway company is keenly alive to the effect of this on its earnings, and when the £ sterling value of the Portuguese escudo fell so alarmingly and rapidly towards the end of last year (1922) the Government of Angola was at once approached with the request for a revision of rates which would compensate for the depreciation of the escudo. After somewhat protracted negotiations, a new schedule of rates was sanctioned, and brought into force towards the end of March, 1923. These new increased rates, it is anticipated, will result in net earnings of a sterling value of about £70,000 per annum, exclusive of any earnings there may be from construction traffic. During my recent visit to Angola I discussed the exchange question with the High Commissioner, and I believe that an arrangement will shortly be made which will still further improve our position in this direction.

Nile-Congo Divide Syndicate.

While in Khartoum I discussed the affairs of this syndicate with the authorities there, and am pleased to say I have been able to settle in principle with the Sudan Government a satisfactory basis for the further development of our interests. The general lines of the arrangement which the Sudan Government is prepared to accept are: First, that the syndicate will have five years' exclusive prospecting rights over 60,000 square miles on condition that it spends £100,000 during that period. Second, that the syndicate would have the right, subject to reasonable conditions, to work any payable discoveries it may make either in partnership with the Government or on a basis of a reasonable mining lease and royalty. The details are now being discussed, and certain conditions will have to be complied with, but I can say that the Sudan Government authorities are dealing with me in a fair and broad-minded way. During the past year prospecting work has been carried on in various parts of the concession, and up to the present twenty-six prospecting areas, each of ten square miles, have been registered. Of these areas thirteen are for alluvial gold, eight are for copper and gold ore deposits, three are for reef gold, one is for asbestos, and one for graphite. The work done has been confined to prospecting, and has resulted in the discovery of further extension of the gold-bearing copper reefs in the north-western part of the concession, and according to Mr. A. P. Thomson, who is in charge of the work in that part of the concession, the copper occurrences, apart from the large Hofrat-el-Nahas mine, extend over a distance of thirty-six miles. Two areas located along a twenty miles extent of the Ibba River for alluvial gold have recently been examined by our engineer, Mr. J. G. Bower, who reports favourably upon them. In the south-eastern part of the concession the prospecting work has resulted in showing a very general distribution of alluvial gold in a large number of main and tributary waterways over a large area, which show very encouraging indications in a number of localities. On the whole the results of the work done to date are very encouraging.

Earth Tremors.

The subject of earth tremors was again forced on public attention this week by several severe shocks on Sunday and Monday. "The Star" interviewed Major U. P. Swinburne, the Chief Inspector of Mines, on the subject, and he stated that earth tremors were becoming more marked on the Rand, owing to the increasing depth of the mine workings. The whole subject, it may be remembered, was very thoroughly ventilated some years ago, before the Mine Subsidences Commission, which made an exhaustive examination of the matter, and published a lengthy report. The gradual settling down of the workings in exhausted and worked-out outcrop mines is, no doubt, the cause of our earth tremors, and there seems no reason to fear that the process will not continue with comparative immunity from loss of life and property.

Benoni Forging Ahead.

Last Saturday week the opening of the new Municipal Offices and Carnegie Library marked a new stride forward in the progress of Benoni. The industrial advance of the centre is keeping step, the most important local industries being the Dunswart Iron and Steel Works, the Standard Brass Foundry, the Welding Works, and the Colonial Timbers, Ltd.

Rock Temperature Measurements.

RAND AND KIMBERLEY FIGURES.

At a recent meeting of the Geological Society of South Africa, Messrs. H. Pirow and L. J. Krige read a valuable paper on the "Temperature Measurements in the Dubbledevlei Borehole, Carnarvon District." Professor G. A. Watermeyer, who exhibited and explained the instrument in connection therewith, gave a survey of the borehole in a note entitled "Notes on the Survey of a Borehole, Dubbledevlei, Carnarvon, C.P." The paper and the discussion on it indicate clearly that the low temperature gradient on the Rand is merely a result of the abnormally good thermal conductivity of the Witwatersrand quartzites and associated beds. At the June meeting of the Society, the following contribution to the discussion on Messrs. Krige and Pirow's paper was submitted on behalf of Dr. P. A. Wagner:

"Dr. Krige and his collaborators are to be congratulated on having carried out successfully in the face of considerable difficulties a very important piece of work, and also on having presented their results in such an interesting manner. The comparatively steep temperature gradient shown by the Dubbeldevlei borehole has come as a surprise to those of us who had tacitly assumed that the gradient, throughout the plateau tract of South Africa, was very low. This assumption was based on actual experience in the mines of the Witwatersrand and Kimberley.

"At Kimberley, where the geological section is not altogether unlike that at Dubbeldevlei, the rock temperature at a depth of 3,520 feet, in the Kimberley Mine was 96° F., and that of the underground water issuing at that depth 98° F. In the Dubbeldevlei borehole the temperature at the same depth would, according to the data published by the authors, have been no less than 139·9° F., a truly remarkable difference, seeing that the country rock at the depth stated was in both instances gneissic granite. The main difference between the Kimberley Mine and the Dubbeldevlei sections is that there is in the former a much smaller thickness of Karroo and a much greater thickness of pre-Karroo igneous and sedimentary rocks. Actually the thickness of the Karroo beds in the Kimberley Mine shaft, exclusive of 51 feet of dolorite, is 311 feet, whereas at Dubbeldevlei it is 1,868 feet exclusive of 269 feet of dolerite. Now it has been proved conclusively by the authors that the Karroo sediments are very bad conductors of heat. *It appears reasonable to infer, therefore, that the rapid increase of temperature at Dubbeldevlei is due mainly to the very considerable thickness of the Karroo beds there, as compared with that at Kimberley.*

"This inference receives endorsement from the fact that the temperature gradient in the pre-Karroo rocks at Kimberley is not very much lower than that at Dubbeldevlei. Thus, according to Gardner F. Williams,[*] the rock temperature at a depth of 1,200 feet in the Kimberley Mine was 72·1° F. Taking that at 3,520 feet to be 97° F., this would mean an increase of 24·9° F. in 2,320 feet, or 1° F. per 93·2 feet. In the pre-Karroo rocks at Dubbeldevlei the temperature increases at the rate of 1° F. per 76·4 feet[†]; a difference of only 16·8 feet.

"It is probable that more accurate figures are now available for the Kimberley Mines. A detailed comparison between the temperatures at various depths and in various geological formations in these mines and those obtained at Dubbeldevlei would be of the greatest scientific interest. It is to be hoped, therefore, that some of our Kimberley friends may be induced to contribute to the discussion. I would suggest, indeed, that Mr. Alpheus Williams and Dr. J. Sutton be invited by the Secretary to do so."

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[*] "The Diamond Mines of South Africa," Vol. I., p. 339.

[†] The rate of increase in the Karroo beds works out at 1° F. per 42.1 ft.

Swaziland Mineral Development.

POINTS FROM IMPORTANT MEMORANDUM BY CHIEF INSPECTOR OF MINES FOR THE UNION.

A valuable memorandum affecting important recommendations has been presented to the Swaziland Mineral Commission by Major [illegible], A.R.S.M., who is the expert member of the Board. *Inter alia*, he says:—

It is assumed that the Swaziland Mineral Concessions will be thrown open for prospecting in blocks of not more than 10,000 morgen. On these blocks an ordinary prospector should be able to mark out a prospecting or protection area 2,000 feet by 2,000 feet, and should have the exclusive right of prospecting in such area so long as he prospects to the satisfaction of the mining authorities and maintains his pegs in proper order. It should be made quite clear that the mining authorities can cancel this prospecting right if the area is not worked. No prospector should be entitled to peg or hold more than one prospecting area in the same block at one and the same time for any mineral except liquid oil.

Deep Boring for Oil Should Be Provided For.

If *bona fide* applications are made for the deep boring for liquid oil, the Government should be able to grant applications for more than one prospecting area to one individual, with discoverer's rights in proportion, in order to be able to give exceptional facilities and rewards for finding mineral oil, which would be of such great importance to the country.

Discovery of Coal Excluded.

In passing on from the prospecting stage to the actual discovery of minerals, it must be remembered that the existence of coal in Swaziland has been known of for many years and that the coal beds have been opened up in several places. At present, for economic reasons, it does not pay to work this coal. As, therefore, no discovery of coal could reasonably be claimed at the present time, it would be advisable to exclude coal and its kindred minerals, oil-shale and torbanite, from the proposed proclamation. No precious stones have been found in Swaziland and, at the present time, it does not appear necessary to provide for their being worked under the proposed new mining law.

Tin.

The commonest mineral discovered up to date in Swaziland is alluvial tin, a mineral which in alluvial form is not often found in South Africa, and for which special provision should be made in the granting of discoverers' rights. Past experience shows that the best alluvial tin deposits lie in a limited area in the numerous Swaziland creeks.

Number of Claims.

Therefore, in granting a discoverer's reward, the reward or discoverer's claims should be judiciously limited in order not to take up the whole alluvial deposit. In rich alluvial tin areas a very few claims will give very handsome returns to an individual worker, but in a poor area of low grade alluvial anyone holding a small number of claims would probably have to dispose of them to, or amalgamate with, other owners to form a large block for cheap hydraulic working.

Discoverers' Rights Commission.

It is important to give some official or board of officials full powers to adjudicate upon all filed discoverers' applications, and the decision of these officials should be final, so as to settle once and for all what is a legitimate discovery. As economic conditions are constantly changing, it is quite possible that mineral deposits, like limestone, clay, soapstone, marble, etc., that have been lying unworked for years might assume a certain value by reason of better roads or railways, and that these deposits might be suddenly exploited as discoveries. Any applications of this sort could be dealt with on their merits by the officials referred to above, whose decision should be final.

When a mineral discovery shall have been notified and the Government is satisfied that it should be regarded as a genuine discovery and that there are reasonable grounds for believing that a mineral or minerals exist in payable quantities at such place, the mining authorities would give the prospector a notice entitling him to peg his discoverer's reward within thirty days.

Discovery Rewards.

(*a*) For alluvial gold discovery a minimum of one claim and a maximum of five claims is suggested. Payable alluvial gold is largely a thing of the past in this country, and it is not likely to be an important item in Swaziland mineral development. In countries where alluvial gold took an important place, one claim was considered a valuable holding, and it is only when the deposit is poor that a large area is necessary for economic working. (*b*) For alluvial tin a minimum of one claim and a maximum of five claims is suggested. Profitable results have already been obtained from very small areas of alluvial tin in Swaziland, and a large grant of discoverer's claims might absorb the whole mineral deposit to the exclusion of other peggers. (*c*) For base metal deposits other than alluvial, a discoverer's reward of not less than ten claims and not more than one hundred claims is suggested, as a base metal mine can be fairly worked within these limits. (*d*) For precious metals other than alluvial, not less than ten claims and not more than fifty claims is suggested as the discoverer's reward, and it is submitted that these areas can form a working mine under favourable conditions. In pegging his discoverer's claims the discoverer should be allowed to go over the boundary of his prospecting area provided the ground is vacant and is on the same proclaimed block.

In the case of precious and base metals it would also be advisable to add a proviso that if a discovery was made by prospecting or boring to a greater depth than one thousand feet, the Government should, if the extra area was available, increase the size of the discoverer's claims by an area not exceeding fifty claims for every such additional thousand feet.

The block of claims allotted to the prospector or discoverer's claims should be free of licence money for a period of three years, if prospecting and mining are carried out to the satisfaction of the mining authorities.

Owner's Mynpacht.

The size of the area or areas to be selected by the owner as a mynpacht after the discoverer's reward has been defined should depend on the size of the mineral block that is open to prospecting, and it is difficult to suggest a mynpacht size until the different areas of the ground to be thrown open have been decided. In most cases even the subdivisions of the mineral concessions will be of large extent — much larger than the farms that are proclaimed from time to time in the Transvaal, where the owner can claim one-fifth as a mynpacht. The Commission should have no difficulty in coming to an arrangement with the mineral concession owners re the size of an owner's mynpacht for the new Swaziland law, and one-fifth of the proclaimed area is suggested, but not to exceed 600 morgen. The mynpacht should be, as far as possible, rectangular in shape, and should be properly beaconed, and it should be compulsory for the owner to maintain the beacons in a proper manner to the satisfaction of the mining authorities.

Definitions.

A Claim.—A claim shall be 150 Cape feet in breadth and 400 Cape feet in length and, in the case of a precious or base metal reef claim, the breadth shall be taken along the strike of the reef and the length across the strike. Every claim shall be pegged, as far as possible, in a rectangular shape, and shall not exceed sixty thousand square feet.

Precious Metals.—Precious metals shall mean

(a) Gold and silver and platinum and their ores, and gold and silver and platinum found in combination with a base metal where such gold or silver or platinum cannot be worked apart from such base metal, and where the value of the gold or silver or platinum exceeds the cost of production, with such precious and base metals.

(b) Any other metal (not being a base metal) declared by proclamation of the High Commissioner in the *Gazette* to be a precious metal.

Base Metals.—Base metals shall mean quicksilver, iron, lead, copper, tin, zinc, cobalt, nickel, arsenic, manganese, antimony, bismuth, as well as the ores of such metals, and sulphur, iron pyrites, graphite, or any other mineral substance other than precious metals and precious stones.

Diamond Recovery Reflected in Six Months' Returns.

GOVERNMENT STATISTICS SHOW HALF-YEAR'S TOTAL OUTPUT EXCEEDS THAT OF 1922.

The following are the official Government returns of diamond production in the Union for the first six months of 1923. It will be seen that the output exceeded that for the whole of 1922, and that the value of the sales was nearly equal to that for the same year:—

	Total Production.		Total Sales.	
District and Province.	Metric Carats.	Estimated Value. £	Metric Carats.	Value. £
Witwatersrand*	40.29	118	40.29	118
Pretoria ...	216,443.43	330,607	415,461.68	580,462
Klerksdorp	63,027.83	427,573	63,027.83	427,573
Transvaal	279,511.55	758,298	478,529.80	1,008,153
Kimberley	329,465.07	990,630	475,368.54	1,644,142
Barkly West	28,936.78	216,800	28,936.78	216,800
Taungs	127.42	829	127.42	829
Herbert ...	2,123.66	15,245	2,123.66	15,245
Kuruman	33.53	166	1.00	6
Hay ...	11,246.50	30,940	11,385.78	32,477
Hopetown	4,282.95	49,439	4,282.95	49,439
Vryburg	124.86	1,570	124.86	1,570
Mafeking	154.50	842	154.50	842
Prieska	18.75	92	18.75	92
Cape	376,514.02	1,306,553	522,524.24	1,961,442
Fauresmith	82,046.60	204,896	110,030.90	292,360
Boshof	16,356.10	43,425	16,149.31	43,780
Kroonstad	32.20	277	2,722.71	2,799
Winburg	503.48	2,050	603.47	3,908
Rouxville	197.70	854	115.50	1,210
Vredefort	24.51	155	26.30	169
Philippolis	0.50	1	—	—
Orange Free State	99,161.09	251,658	129,648.20	345,226
Union of South Africa (Six months ended 30th June, 1923)	755,186.66	2,316,509	1,130,702.24	3,314,821

* Recovered by certain Witwatersrand Gold Mining Companies.

SELECTED NEW PATENTS.

Donald Muir and Hugh Buchanan.—Improvements in or relating to means for manufacturing centrifugally cast pipes, columns, and other hollow articles.

Siemans Bros. and Co., Ltd.—Improvements in or relating to telephone systems employing selecting devices.

Archibald Cullen.—Improvements in jockeys or rope grips for use in mechanical haulages and the like.

John Leonard Holman and Kenneth James Holman.—Improvements in and relating to rotary or percussive tools.

Edward G. Herbert.—Method of and means for testing the hardness of metals and other materials.

Sidney P. Blackmore.—Improvements appertaining to plug cocks and the like.

William B. Ballantine and Frank Goodwin Green.—An improved crossed filament for electric incandescent or glow lamps.

Siemens (S.A.), Ltd.—Improvements in or relating to electrical bell-pushes and pulls, switches and the like.

N.V. "Erda" Maatschappij voor Wetenschappelijk Aardonderzoek.—Method of ascertaining the percentage of salt in underground water.

N.V. "Erda" Maatschappij voor Wetenschappelijk Aardonderzoek.—Methods of detecting or discovering mineral layers and the like embedded in the earth by means of electromagnetic waves.

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Johannesburg.

The South African Mining and Engineering Journal.

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TOPICS OF THE WEEK.

South Africa and the Empire Exhibition.

According to a cable in the local press, within twenty hours of the signing of the contract Messrs. McAlpine commenced work on the foundations of the South African pavilion at Wembley. The completion of the building in time for the opening of the exhibition may necessitate day and night shifts, and even now it is somewhat doubtful of accomplishment. The extension of the pavilion by 13,000 feet—of which Rhodesia asks 5,000—has further handicapped the builders in the race against time. During the past few days many South Africans holidaying in England have visited Wembley, and all are unanimous in praise of the site of the Union pavilion. These expressions of approval have been gratefully received by the London committee, who have many anxious moments. They are not yet out of the wood, for the subscription fund at present does not exceed £14,000. A further appeal will be issued on Mr. Mosenthal's return to London.

Sir Lionel's Letter to "The Times."

Sir Lionel Phillips has rendered a great public service to the British race by directing attention to the menace of the growing spirit of independence towards the Motherland that exists in the Dominions. There are no doubt many who will profoundly disagree with Sir Lionel and who will argue that the Empire is stronger and more united to-day than ever, and that the growth of independence has not destroyed the essential bonds of interdependence. And yet one is often tempted to wonder whether this is really so. Kipling's memorable metaphor of "Daughter in my Mother's House but Mistress in my own" seems dangerously near requiring alteration to something which infers that as the Daughters have grown up their Mother's House has become a far distant and traditional abode which interests them less and less as the years go by. Sir Lionel has said in a few crisp sentences what a great number of overseas Britons have been thinking almost ever since the conclusion of the War, but have lacked the courage or have not the authority to say it, and that is simply this: that the policy of drift from the Motherland and the lately grown phases of independence and self-determination are leading towards disruption rather than unity. Sir Lionel's letter to *The Times* makes an appropriate appearance on the eve of the assembly of the Imperial Conference, and it will appeal to subjects of the Empire, no matter whether they may be Statesmen, Industrialists, or the ordinary Britishers resident in the British Isles, or the self-governing Dominions or the Colonies. This letter sounds a timely note of warning, strategically as well as economically, and it will doubtless be read with intense interest by many thousands of people, whether born in the British Isles or the overseas dependencies, to whom the word "Home" still means something definite and sacred.

The Mines and the Cattle Trade.

It is common knowledge that the Mining Industry has for years past in many different ways endeavoured to assist the farming community to find a direct market on the Witwatersrand. As regards white mealies, of which 350,000 bags per annum are consumed by the mines, 250,000 are bought direct from the farmers through the co-operative societies. The Meat Exchange, now defunct, had practically the whole of the meat business of the mines, and, as is well known, that trade is of the utmost importance to meat producers in providing an assured market for parts of meat which are difficult to dispose of in the ordinary way. The meat consumption of the mines is indeed the key to the meat trade of the country, and around it centred a great deal of the recent internal struggle in the Meat Producers' Exchange. Not only have the mines through their policy of encouraging direct contact between the producers and consumers of agricultural produce assisted in the development of agriculture throughout the country, but much of the recent development of agriculture—including fruit growing—in the Transvaal has been due to the influx of new blood and new capital from the mining community.

There is a tendency, however, if a dispute occurs amongst agriculturists and on the one side are found agricultural interests which have originated on the Witwatersrand, to charge the mining industry with taking sides in an agricultural dispute. Any such charge is, however, entirely unfounded. The mining industry is run as an ordinary industrial concern, the primary object of its controllers being the interests of the mines. It is absurd to suggest, as has been done, that those interests have been made subservient to agricultural enterprises in which individual mining shareholders are interested. In connection with the old Meat Exchange, it was suggested that the mining industry would take sides in support of the big ranching companies; but, unfortunately for the adherents to this view, the industry adopted an entirely neutral attitude in that connection, with the important qualification that it has endeavoured to leave the door open for the future resumption of direct purchases of meat by the industry from a resuscitated meat exchange. The cry of "octopus" is occasionally raised when the financial interests connected with the mining industry take a hand in the direction of new fields of enterprise in South Africa. Those who raise this cry may well ask themselves whether they really would like those financial interests to confine their activities entirely to mining. Let these individuals consider how much is being done for the development of the country through the participation of those interests and ask themselves where such development is to come from if the mining interests are to withdraw into their shell and take no interest in other activities.

The "J.C.I." War Memorial.

A tablet commemorating the memory of employees of the Johannesburg Consolidated Investment Co. and associated companies who fell in the Great War was unveiled by General Smuts, the Prime Minister, in the company's board room last Saturday morning. In welcoming the Prime Minister and Mrs. Smuts, Mr. [illegible], the joint managing director of the corporation, said that 1,147 of their employees had gone to the front and [illegible] of these had given their lives. The corporation felt that it was fitting that the memorial should be erected in their board room. General Smuts said he felt that it was both a privilege and an honour for him to be asked to unveil the tablet, which he thought would be the chief ornament of the board room. Almost 1,200 men had gone on active service from the Johannesburg Consolidated Investment Company's service, and but for the constant appeals to many others to remain at their work in order that the mining industry should not suffer, that figure might have been doubled or trebled. He looked upon those who had remained behind and stuck to their posts as having done their duty too.

London: A Free Gold Market.

As we indicated briefly a few weeks ago, the subject of the resumption of London as a free gold market is ably dealt with in the current monthly review of the Westminster Bank. From this one gathers that the alteration is desired by the bankers of the United States. The concentration in that country of about half the world's stock of gold (instead of about a quarter, as in pre-war days) has destroyed its stability and has linked its commodity value to the ebb and flow of trade within the boundaries of that nation. In particular, the continued influx of fresh gold led to a pronounced price inflation in the States, and stimulated an artificial trade boom which was only brought under control by the action of the Federal Reserve Board in April last. The presence of this gold has destroyed the old landmarks, the old danger signals, in that expansion in business to an unhealthy degree is no longer accompanied by a dwindling in the reserves of American banks below the limits imposed by common prudence. In other words, United States bankers can no longer regulate their policy by the proportion of their cash resources to their liabilities, but are forced to govern their actions by the general trend of prices. The result of this change is that any raising of discount rates is liable to arouse greater opposition on the part of the trading community; for while everyone can appreciate the necessity for higher money rates in the face of an undue expansion in bankers' liabilities, no business man likes to be pulled up short merely because prices are advancing. Hence it is not surprising to learn that a suggestion was seriously put forward that what is termed "America's excess supply of gold" should be set apart, and should no longer be permitted to enter into the balance sheet of the Federal Reserve Board, and so into the daily life of the country. It might be asked, what has this to do with us? Are we to revert to the gold standard in order to get America out of her difficulties? Most people would answer that America can well afford to look after herself. It is obvious that Great Britain cannot afford to ignore the position in America, as was shown by the raising of the bank rate lately, for any adverse developments in that country would soon be reflected in London. The true solution, as the writer in the Westminster Bank review points out, lies in a dispersal of the flow of gold, so that all excess bullion now in the United States leaves American shores and is spread evenly throughout the rest of the world. Unfortunately this problem, though easy to enunciate, is not easy to solve. It postulates the restoration of the industries of Europe to their normal level of production. It demands the cessation of currency inflation and the reduction of national expenditure to a point where it can be met out of revenue. It requires that each country should cease to import more goods than can be balanced by exports, but, unfortunately, in so far as the greater part of Europe is concerned, the problem has still to be stated to be found insoluble at any rate during the next few years. It is argued, however, that there are some stable countries, such as Sweden, Holland and Switzerland, which would follow the lead of England in this matter. If London re-established itself as a free market for gold these other countries might well follow suit, with the result that the free interchange of gold would take place between a small group of countries which might well form a nucleus for the remainder to join. There are various other matters to consider, including the relativity of prices, and it remains to be seen if Great Britain can maintain its present success in discharging its obligation to the United States before attempting to combine with it the responsibility of a free gold market and all that it implies. In the opinion of the writer quoted, it is difficult to resist the contention that a further rise in the bank rate to 4½ per cent., or even 5 per cent., as might be required initially, would, under existing industrial and financial conditions in Great Britain, be too heavy a price to pay for the advantages of a free gold market.

Railways and Industries.

The annual reports of the various Assistant General Managers of the S.A.R. are now to hand, and several of them, in addition to dealing with the increases, or decreases, in passengers and goods carried over their particular systems, give interesting information with regard to agricultural, mineral and industrial operations. Mr. R. B. Gettliffe, A.G.M. of Railways, Johannesburg, gives a particularly good resume in his report. He states, *inter alia*: "The mineral possibilities in the neighbourhood of Ottoshoop are promising. A fluor-spar quarry has been opened, and an average of 350 tons per week is being railed to Cape Town for export. Lead and zinc propositions are also attracting attention. Silver bearing lead is being despatched from Argent to Lourenco Marques for shipment to England. The activities at the mine resulted in an increased tonnage of 10,440 tons in goods traffic at Argent, mostly in coke, iron ore, and limestone traffic." The manner in which the development of industries react to produce activities in other industries, and increased traffic upon the railways, which is illustrated in the paragraph above, is emphasised in the next, which states: "A greater output of explosives at Kempton Park led to an increase of 18,352 tons in goods traffic at that station. The chemical works at Delmore increased its output and extended its activities during the year to the manufacture of oxygen and sheep dip, the latter being made from tobacco. An increase of 4,000 tons of goods traffic was recorded at Delmore during the year. Satisfactory industrial progress is being made at Germiston, where several firms have increased their output and extended their plant during the year." Dealing with industries developing, the report states: "An asbestos proposition is developing in the Eshowe district. 27,975 tons of coke, 839 tons of tar, 713 tons of calcium carbide, and 363 tons of sulphate ammonia were dispatched by firms engaged in the manufacture of coal by-products. One company contemplates building a large number of coke ovens as their present equipment cannot cope with orders. Three new collieries in the Vryheid district reached the producing stage during the year. Trade conditions for the first six months of the financial year were unsatisfactory (states Mr. P. E. Potter, A.G.M., Bloemfontein), but an improvement was shown during the period October to March. The diamond mines at Jagersfontein and Koffiefontein were closed down for the greater part of the year owing to commercial depression, but activities were restarted last January, though on a modified scale. Mr. A. H. Wallis, Divisional Superintendent, Kimberley, states in his report, under the heading of "General": "During the first nine months of the financial year, there were few indications of a revival of trade and industry, but recently a decided improvement in business has been manifested, and it is generally felt that the tide of depression has turned. The commencement of operations on the Bultfontein, Wesselton and New Eland diamond mines at Kimberley, and the Africander and Rietkuil gold mines in the vicinity of Klerksdorp is encouraging. Although work is being undertaken only to a limited extent at the present time, hopes are entertained that with an improvement in market conditions these industries will be considerably extended at no distant date. The opening up of large gypsum deposits at Windsorton Road and the installation of machinery will increase traffic at that centre. An improvement of trade is also anticipated at Orange River owing to an [illegible] Company developing its property at Elandsdraai. Lime, gypsum, and asbestos show gratifying increases over the figures for the previous year.

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

* * *

The General Mining Meeting.

The annual meeting of the General Mining and Finance Corporation was held on Thursday, when Sir George Albu delivered a very interesting and important speech. Pressure on space prevents us from a lengthier reference to Sir George's peroration at this moment, but we shall deal with it fully next week.

* * *

New Elands.

We understand that, after years of searching for water, the management of the New Eland Mine has at last been successful in striking an underground supply giving sufficient for all purposes. We congratulate the company, which now seems definitely to have turned the corner of its fortunes.

* * *

The Harmony Proprietary Reconstruction.

The Harmony Proprietary directors have found it impossible to raise working capital for the development of the estate by the issue of £48,300 unissued 8 per cent. debentures. The directors have, consequently, arranged to buy the property for £113,000, which will clear off the liabilities. The property will then be resold to a company with a capital of £250,000, divided into 5s. shares, which will be offered to present shareholders at the rate of one new share of 5s. credited with 1s. paid-up for each share now held. Mr. Samuel Weil has joined the board.

* * *

Fire at the Simmer.

A fire broke out on Wednesday morning on the 34th level in Milner shaft of Simmer and Jack mine. The timber in one of the stopes caught alight. Prompt measures were immediately brought into action, and the fire was soon got under control. Much difficulty was experienced owing to the mine being full of smoke and the probability of the stope falling in. Four men were overcome by the fumes, but recovered after treatment at the hospital. At 11.30 it was reported that the fire had been practically extinguished, and the damage as far as could be gathered was confined to the one stope. The underground men and boys were not allowed to go on shift on Wednesday morning, but it is expected the mine would be cleared of smoke and be ready again for Wednesday night's shift.

* * *

More Gold for India.

Arrangements are being made for another consignment of Rand gold to be shipped direct, via Durban, to India, instead of being sent to London and reshipped to India, as in the past. Settlement is still being made in London, but the saving in cost and the greater convenience to all concerned by the direct shipment is of course greatly appreciated. India was the largest buyer of South African gold during the first six months of the present year, taking £12,751,000, or nearly 60 per cent. of the total shipments, while New York took £5,500,000, or just over 25 per cent. Last year India took 2,865,015 oz. out of the South African total production of 7,683,718 ounces, while New York took nearly 1½ million ounces. The recent high price which gold is realising—the highest reached this year—is helping the industry in the struggle to make ends meet—which in the case of many low grade propositions is a very real struggle—and the helpful influence of this high price will doubtless be reflected in the returns of the present month's operations.

* * *

Pretoria Portland Cement.

In an article on Pretoria industries by our Special Commissioner, printed in our last issue, several incorrect figures were quoted. In dealing with the cement works at Pretoria one has to be careful to distinguish the figures concerning it from those of the Slurry factory belonging to the same company, the Pretoria Portland Cement Co., Ltd. The Pretoria works employ 150 Europeans and 1,200 natives, not 50 of the former and 300 of the latter as stated last week. A wrong impression is given by the statement regarding the market for the output. The fact is that only five of the six kilns are at work. Again, the coal consumption of the Pretoria works is fifty tons, not 120 tons as stated. The tube mills at the Pretoria works are 150 feet long, and those at Slurry 200 feet long—not 144 as stated. Our correspondent's view that the cement industry will take second place to the projected iron and steel industry in Pretoria cannot be maintained, as it is most unlikely that the latter will employ a larger number of white workers. Nor can the statement that the principal demand comes from the Government and the P.W.D. be substantiated. Certainly a large proportion of the orders for the product does come from that quarter, but not the main share. In our commercial notes last week, it was stated that "owing to the cost of imported cement and local prejudice, all mortar and plaster work is done with imported cement." This, to say the least, is untrue and our commercial correspondent appears to have accepted the opinion or wishes of someone interested for the facts. The Pretoria Portland Cement people have always shown a praiseworthy willingness to face publicity in this respect, indeed, they have set an example that might be followed by others, and we regret all the more, therefore, that any incorrect statements or figures bearing on their operations should have been allowed to appear in our pages.

* * *

"S.A. Props."

A subscriber writes asking our opinion about "S.A. Props.," a share which is being vigorously puffed by a London bucket shop. The following extract is from a leaflet article on this venture, which, it is said, "owns two properties, one situated in Rhodesia and the other in Natal, both very extensive and each proved to contain enormous deposits of gold." The first named property consists of [illegible] in the Mines Journal. Of this the [illegible] writer says:—"Whichever what 'S.A. Props.' or Mammon may bring forth, or what may come to be their ultimate outcome? What makes [illegible] the gem of the [illegible] lies in the description of the farm near the old [illegible] mine in the Republic. This brings us to the consideration of 'S.A. Props.' other property, which is situated [illegible]," says the writer. "A huge property [illegible] square miles in extent. It is known as 'Jammerdal' and, fortunately, it adjoins the farm 'Witkranskuil,' the well-known estate on which very rich reefs are being most profitably exploited. Seven gold-bearing reefs are known to traverse 'Jammerdal,' two of these being quartz and two banket reefs, the latter being identical in every particular with the formation of the Main Reef on the Central Rand. All the reefs have been fully examined and reported on by various well-known mining engineers and geologists, and numerous samples assayed have given as high values as 36 dwt., 4 oz., 14 oz., 40 oz., and so on up to 127 oz. to the ton! Even the lowest of these assays are unusually rich, and as the reefs are of large width, it may safely be asserted that 'Jammerdal' has the making of one of the biggest and richest single mining undertakings in the world. From the point of view of economy it may be noted that there is practically an unlimited supply of water, both for motive power and milling purposes, on the property." Investors would be well advised to leave the precious "S.A. Props." and 'Jammerdal' severely alone.

* * *

White Employment Dependent Upon Native Labour Supply.

How dependent the number of white employees of the mining industry is upon the number of natives at work is well illustrated in the latest labour return, issued by the Department of Mines and Industries of the Union of South Africa. This return contains figures up to the end of July of this year, and it shows that the maximum number of white men employed by the various branches of the mineral industry of the country, for some considerable time past, was in March and April, when the various mines had the maximum number of native labourers at work. Since April there has been a steady decline in the number of native labourers available, and, simultaneously, the figures relating to the number of white men employed have declined in almost direct ratio to the decline in the coloured labour supply. The falling off in the number of natives at work on the mines is chiefly traceable to the restrictions relating to recruiting in Portuguese East Africa, imposed by the Government twelve months ago.

The following figures extracted from the return in question show clearly one important effect of these restrictions, the reduction of numbers of white men at work:—

All mines of the Union, i.e., Gold, Diamonds,
Coal, Base Metals and others.

Month 1923	Whites Employed	Coloured Employed.
March	31,039	263,572
April	31,155	260,394
May	30,230	258,707
June	29,225	253,811
July	28,517	250,366

* * *

Wages on the Gold Mines.

The Government Mining Engineer's official statistics showing the wages paid at the gold mines during June of this year, have now been published. They show that on the surface the average pay is 18s. 5d. per day, and underground 23s. 7d. per day. In June, 1914, the average pay was, on surface, 16s. 10d. per day, and underground 20s. 8d. per day. The average for all classes is now 20s. 11d. per day, as compared with 18s. 9d. per day in 1914, an increase of 11 per cent.

The increase has been greatest in the less highly-paid classes; thus reduction works have increased from 15s. 3d. in 1914 to 19s. 1d. in 1923; engine drivers and firemen from 18s. 7d. to 20s. 5d.; day's pay miners, from 19s. 1d. to 20s. 6d. The mechanics have increased from 20s. to 26s. 10d. on the average, and those aristocrats of labour, the underground contractors, now receive an average of 34s. 3d. per day, as compared with 30s. 6d. in 1914. The average all round is now slightly higher than just after the strike.

* * *

Fifth Annual District Mine Ambulance Competitions (Johannesburg District).

By the courtesy of the Directors and Mr. M. O. Tillard, the Manager, the Competition for the above district will be held at the Village Deep, Ltd., near Johannesburg, on Sunday, the 2nd September. The following underground teams have been entered, the names of the Captain being given against each team:

1. Robinson Deep, Ltd. (H. T. Otto).
2. City Deep, Ltd. (W. E. Sinclair).
3. City Deep, Ltd. (W. G. Upham).
4. Crown Mines, Ltd. (H. G. de Mellert).
5. Crown Mines, Ltd., W. (W. Maher).
6. Crown Mines, Ltd., W. (W. T. Webster).
7. Crown Mines, Ltd., E. (J. B. Stewart).
8. Crown Mines, Ltd., E. (C. R. Liebenberg).
9. Wolhuter G.M., Ltd. (E. A. Quayle).

Each team will appoint one of its reserve men to act as a supervisor of a competing team. The two surface teams entered from the Village Deep and Crown Mines will be the only representatives of the district in the Shield Competition. The competition, which will be held on the surface, will commence at 9.0 a.m. sharp, and every team must be on the property ready to start at 8.30 a.m. Captains of teams will report at 8.30 a.m., when, after calling the roll, the order of competition will be notified. Each member of each team will find enclosed a copy of the Rules of the Competition, with which they are expected to be conversant, several alterations having been made since last year. Lunch will be provided, by the kindness of the management for competitors and officials only, to whom tickets will be issued at roll-call. Those interested in the First Aid movement are cordially invited to be present.

* * *

Local Industries.

A Special Commissioner of this paper is now engaged in writing up the local industries of the Transvaal, whether allied to mining directly or indirectly. This week the works of the Rand Carbide Company at Germiston are dealt with, and in future issues it is hoped to review in detail the growing activities of our other local industries.

Mining Men and Matters.

We are informed that Mr. Alexander Sutherland, who has been manager of the Johannesburg, Simmonds Street branch, of the National Bank for some eight years past, has now been appointed assistant general manager of the Bank, resident in the Witwatersrand area. Pending official appointments, Mr. J. E. C. Brown, at present assistant manager, assumed control of the Simmonds Street branch as acting manager.

* * *

Says the "Canadian Mining Journal" of July 27:—Leopold Albu, managing director of the General Mining and Finance Corporation of London, England, passed through Vancouver recently en route to Northern British Columbia and Alaskan mining fields. After personally inspecting some mining properties he will return East via California. In travelling westward Mr. Albu examined some of the larger mines of Northern Ontario. His company has extensive mining interests in South Africa, and in speaking of his impressions of this country he said that Canada has all the advantages of South Africa plus the priceless boon of ample water and profuse vegetation.

The Week in the Sharemarket.

AN IMPROVING TENDENCY—GENERAL ADVANCE IN PRICES—DIAMONDS QUIET.

After some hesitation at the week-end the market has resumed its improving tendency. The appreciation has been general. Modders remain a firm market. It is said a considerably improved reserve will shortly be disclosed. City Deeps have not been in quite so marked demand. Nourse Mines remain scarce without much movement in price. Anglo-American stocks have been the feature, Brakpans, Springs, West Springs, and Anglos themselves, being all better. Brakpans are expected to show very good profits for the month. West Springs, no doubt stimulated by the good progress being made towards the erection of plant, have been an active and improving market throughout. Of the Union Corporation stocks, Gedulds and Modder Deeps both remain steady and in fair demand. Barnato stocks have all been good except Van Ryn Deeps, which seem to be at the mercy of any slight selling that may come to the market. Randfonteins are improving. New States are steady. Consolidated Goldfields stocks, as usual, featured the Robinson Deep issues, the "B" shares coming in for considerable attention. This attractive share is drawing public attention. General Mining stocks have had a quiet week. The diamond market is dull and shares not in much demand. It is said that Crown Diamonds have now got the full plant in operation. Returns may at first not come up to expectations, but an improvement may be evident at a later date. Consolidated Diamonds have been featureless, and there is nothing new to record about the other quoted stocks. Tins have improved on the advancing price for the metal. Zaaiplaats Tins have advanced, and, as the position of this company is sound, there might be better prospects in store for the shareholders. Cements are inclined to harden. Pretoria Cements have improved, and it is said that the business prospects for the company are brighter than they have been for some time. The shares of the Transvaal Platinum Syndicate, which attracted some attention, have receded to the region of 40s. There are rumours that a powerful company is about to participate in this concern. Very little was done in Investment stocks. There have been buyers of Reserve Banks always in evidence, but little business. Loans have not attracted much buying, the interest having for the present been diverted to gold shares. The market appears to be in a healthy condition. The industry is doing well, and there is a prospect of expanding activity in shares, both here and in London. Money is plentiful, and stock still very scarce.

	Fri. 24th.	Sat. 25th.	Mon. 27th.	Tues. 28th.	Wed. 29th.	Thurs 30th.
Anglo-Am. Corp	22 9*	23 0	23 6	23 10	23 0	23 6
Apex Mines	6 0†	5 6*	5 9*	—	5 6*	5 9*
Aurora Wests	—	—	6 0†	6 0†	5 6*	5 6*
Brakpan Mines	59 9*	60 0	61 0	62 0	63 3	65 0
Brick and Potteries	4 0	4 0*	4 0	4 0*	4 0*	4 0*
Bushveld Tins	0 3*	—		0 3*	0 3*	
City and Suburbans	—	2 6*	2 6*	2 6*	2 6	—
City Deeps	55 0†	54 3*	54 3*	55 0	54 3	54 3
Clydesdale Colls.	17 3†	—	17 3†	17 3†	17 3†	17 3†
Con. Diamonds	20 3†	19 6*	19 9	19 9	19 6*	19 9*
Con. Main Reefs	10 3*	10 3	10 3	10 0*	10 6	10 3
Coronation Colls.	28 0†	—	—	—	—	28 0†
Do. Freeholds	0 5		0 5*	0 5*	0 5*	0 5†
Do. Syndicates	5 9	6 3*	6 3	6 3*	6 2*	6 0*
Crown Diamonds	6 7	6 6*	6 10	6 10*	6 9	6 7
Crown Mines	49 6*	49 9*	50 0*	50 9*	50 6*	50 0*
Daggaftn. Mines	2 1*	2 2	2 2*	2 2*	2 0	2 0
Durban Rood. Deeps	15 6*	15 3*	15 3*	15 9	15 9	15 6*
East Rand Coals	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
East Rand Deeps	0 7*	—	0 7*	—	0 7	—
East Rand Props	4 10*	5 3	5 0*	5 0	4 9*	5 0*
Eastern Golds	0 4*	0 4*	0 4	0 4*	0 4*	0 4*
Ferreira Deeps	5 9	5 9*	5 9*	—	5 9*	
Frank Smith Dmds	2 11*	3 0		3 0*	2 11*	2 11
Geduld Props.	59 9*	60 3	60 6*	60 9	60 0*	60 0
Geldenhuis Deeps	4 0*	4 0*	—	4 0*	—	4 0
Glynn's Lydenburgs	12 6*	12 6*	12 6*	13 0*	13 0*	13 0*
Gove. Areas	113 6	113 6*	113 3*	114 6	113 0*	113 6*
Hume Pipes	—	8 0†	8 0†	—	—	8 0†
Lace Props.	7 9	7 9*	7 9*	7 9*	7 9*	7 9*
Langlaagte Estates	23 6	24 0	24 3	24 3	23 6*	23 6*
Leeuwpoort Tins	4 4*	4 4*	4 6	4 3*	4 3*	4 4*
Luipaardsvlei Est.	—	2 3*	3 3*	—	3 3*	—
Lydenburg Farms	2 6*	2 6*	2 6*		2 6*	2 6*
Middelvlei Est.	1 0*	—	—	1 0*	—	—
Modder B.'s	24 0*	24 3*	24 3*	24 9*	24 6	24 3*
Modder Deeps	39 9*	40 1½	39 6	40 0	40 3	40 6
Modder Easts	5 7*	5 9	5 7*	5 6	5 5*	5 5*
Natal Navig. Colls.	27 0*	27 0*	27 0*	27 0*	27 0*	27 0*
National Banks	117 6*	118 0*	118 0*	120 0†	—	—
New Eland Dmds.	38 9†	38 6†	38 0†	38 0†	—	—
New Era Cons.	6 10*	7 0*	7 0*	7 0*	7 1*	7 3*
New Geduld Deeps	0 6*	0 6*	0 6*	0 6*	0 6*	—
New Kleinfonteins	5 6*	5 9	5 6*	6 0	5 10	5 3*
New Modders	82 3	82 6	82 6	82 9	82 0*	82 6
New Primrose	—	—	3 6†	—	—	3 0
New State Areas	35 0*	35 0	35 6	35 0*	33 6	33 6*
Nigels	—	—	6 0*	—	6 3*	—
Nourse Mines	15 0	14 9*	15 0*	15 0*	14 10*	14 10½
Pretoria Cements	37 0*	37 3*	38 0*	39 0*	—	39 0
Rand Mines	—	52 0*	—	52 0*	—	52 0*
Rand Nucleus	1 2*	1 3†	1 1*	1 1*	1 3†	1 0*
Rand Select. Corp.	—	53 0*	—	—	—	52 6*
Randfontein Centrals	12 0*	12 0*	12 6*	13 0*	12 3	12 6*
Do. Estates	20 3	20 9	21 6	21 6	21 0	21 0
Rouxville Diamonds	1 0†	1 0†	1 0†	1 0†	1 0†	0 6*
Roberts Victors	4 9*	5 0*	5 6	5 6*	5 6*	5 7*
Robinson Deep "A"	33 0*	33 0*	33 0*	33 0*	33 0*	32 6*
Robinson Deep "B"	15 4*	16 0	16 0	15 10*	15 9*	15 9*
Rooibergs	3 3	3 6†	3 3*	3 6	—	3 0*
Ryan Nigels	4 0†	4 0†	4 0†	—	4 0†	4 0†
Rose Deeps	10 0*	—	—	11 6*	10 0*	10 0*
Shebas	2 3*	2 3*	2 5*	—	2 6†	2 3*
Simmer and Jacks	2 7*	2 8*	2 8	2 6*	2 7	2 7*
S.A. Breweries 8.	—	30 0*	30 0*	31 6*	31 6*	31 0*
S.A. Lands	3 2*	3 2*	3 3*	3 4	3 3*	3 4*
S.A. Reserve Bank	£133*	£131*	£133*	£132*	£131*	£135*
Springs Mines	47 3*	48 3	48 3*	48 9*	48 6	48 9
Sub Nigels	10 10½	10 9	10 10½	10 9*	10 10½	10 9*
S.A. Alkali	9 0	9 9	9 6	9 0*	9 0*	9 0*
S.A. Townships	10 3*	10 4*	10 6	10 6	10 0*	10 3*
Transvaal Lands	16 3*	17 0*	17 3*	17 3	—	17 3*
Transvaal G.M. Est.	11 0*	11 0	10 6*	10 6*	10 3*	10 0*
Transvaal Silvers	13 0*	13 3*	13 3*		—	13 6
Tudors	—	—	0 6†	—	—	—
Union 5 per cent.	£101*	£101*	£101*	£101*	£101*	£101*
Van Dyks	1 0†	0 9*	0 9*	0 9*	0 9*	0 9*
Van Ryn Deeps	65 6*	65 3*	65 0*	65 9*	66 0	64 9*
Van Ryn Estates	13 6*	13 9*	13 9*	13 9*	13 9*	13 9*
Village Deeps	12 6	—	—		11 6*	12 0
West Springs	19 7*	19 9*	20 0	20 0*	19 10½	20 3
West Rand Cons.	4 9*	4 9*	4 9*	4 9*	4 9*	4 9*
Western Rand Est.	1 9*	1 9*	2 0	2 0	1 10*	1 9*
Witbank Colls.	32 3*	32 0*	32 6*	32 6*	33 0	32 9*
Wit Deeps	15 9	15 3*	15 6*	14 6*	15 6	15 6
Zaaiplaats Tins	4 11*	5 0	—	5 0*	5 0*	5 6*

* Buyers. † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

Willoughby's Consolidated.

THE COMPANY'S ASBESTOS INTERESTS.

The ordinary general meeting of Willoughby's Consolidated Company, Ltd., was held at Winchester House, Old Broad Street, E.C., at the end of July, Colonel H. T. Fenwick, C.M.G., M.V.O., D.S.O. (the Chairman) presiding. In the course of his speech the Chairman said:—

A fair number of our mining claims were tributed, the royalties received amounting to £1,144. Negotiations for the tributing of other claims are proceeding, and we are also engaged with our partners in the asbestos industry in prospecting for gold mines, which is being undertaken by Mr. Fletcher, the manager of the [illegible] mine, who is a prospector of great experience.

As regards asbestos, at the end of November last year the situation was this. We had been working since March, and whereas we had no difficulty in selling our low-grade product—namely, our No. 3—which is used almost entirely in slate making, owing to the depression of Continental trade and huge stocks of No. 2 grade in manufacturers' and producers' hands, we found ourselves with our No. 3 all sold, but with 1,000 tons of No. 2 on hand. I personally went out, so as to be on the spot when the situation, which, of course, had been foreseen, arose, and I at once decided, with the concurrence of the Board, that we must shut down. We were of opinion that it was no use going on piling up stocks which could not be sold, and which would take considerable sums of money to carry. From the time we shut down we have been gradually liquidating our stock of 1,000 tons, and we hope by the end of the year to have got rid of most of it.

As regards starting up again, your Board are of opinion that it is of no use opening up again and making fibre while the present stagnation in the market for asbestos fibre continues. Why, we ask, having a real good name, should we exhaust it when we would have to sell our products at little or no profit? No, it is our intention to wait until happier times. In the meantime we are studying and preparing plans for the still further improvement of our product against restarting, and in addition, we see our way, when we restart, of considerable economies being effected in the cost of production.

The accounts for the year, as a summary of the foregoing, show that a loss is carried forward to the general profit and loss account of £29,085, but against this it will be noted that there is a great difference in the value of our shareholdings. Whereas at the end of 1921 a depreciation of £59,300 was shown, this year, taking into account the £6,000 Debentures of this company which we received from the [illegible] liquidation, and which we value at par, there is an appreciation over book value of £500. This may be fairly set off against the loss occasioned by having to write off the loss on the [illegible] shares.

There is, I am glad to say, a distinct revival in the mining industry. It is possible now to get men to look into and consider the tributing of claims, and your directors are giving this matter their most earnest endeavours. As I have already stated, the Willoughby Asbestos Pool are prospecting and are already doing work on some claims they have under option, and which are most promising.

As regards the farming outlook, the good rainy season has restored the enthusiasm of the farming industry. Mealies, the staple food of the country, should be cheap, which helps everybody, including the mining industry, which has to feed many tens of thousands of natives.

The new Government will begin to function on the 1st October, and will do so with enthusiasm and determination. I trust and think that the worst is over.

Bechuanaland Exploration Co.

FINANCES EXPLAINED AT ANNUAL MEETING.

The ordinary general meeting of the Bechuanaland Exploration Co., Ltd., was held on July 23 at the Cannon Street Hotel, E.C., Mr. Edmund Davis (the chairman) presiding. In the course of his remarks the chairman said: We now present our report and accounts at March 31, 1923. In accordance with custom, I will deal with some of the items appearing therein, and will compare them with those appearing in the accounts for the previous twelve months. Our issued capital of 601,573 shares of 10s. each is the same as at the date of our previous balance sheet. Creditors and credit balances, £22,129, show a reduction of £150. The only other item on the debit side of the balance sheet is profit and loss account, in which we have, in the first instance, brought in the balance as at March 31, 1922, amounting to £23,427, and deducted the dividend paid on July 26 last, less income tax, the directors' fees for the year ended March 31, 1922, and their additional remuneration, and income tax and corporation profits tax, 1923, a total of £22,139, leaving a balance of £1,288, to which has been added the balance of profit for the year ended March 31, 1923, £18,777, making an available balance of £20,065, comparing with £23,427 at March 31, 1922, though the balance of profit for the 1923 financial year is £2,598 more than the balance of profit for the year ended March 31, 1922. Turning to the other side of the balance sheet, we have, in the first instance, interest in farms, mining claims and rights, town sites and buildings at cost, less amount written off, £50,426, an increase of £569 over the amount standing in our previous accounts under the same heading, due to expenditure to March 31 last on new buildings, less amount written off. Gifford House, £10,447, compares with £10,907 at March 31, 1922, the difference being due to the usual depreciation we write off. At our last meeting we referred to the purchase of a stand adjoining this property, and stated that we had then arranged to construct a large addition to Gifford House. This building should be completed towards the end of this month. It will comprise, on the ground floor, four very fine shops, and on the second floor, suites of offices, and we are advised that it will be a pleasing improvement in the appearance of Main Street. This should enhance the value of Gifford House, and on completion of the building the capital we have expended will bring us in a satisfactory return. Stocks and shares in other companies, at or under cost, £202,829, show an increase of £8,085, this being principally due to increase in our West African and our commercial, industrial and miscellaneous holdings.

METAL 1923 COAL

Total Manager's Certificates Granted	10
Secured by Our Students	6
Balance for South Africa	4
Total Overseer's Certificates Granted	24
Secured by Our Students	16
Balance for South Africa	8

Past six years 95% of the Survey Certificates
——have been secured by our Students.——

More and More Every Day and in Every Way OUR TUITION is recognized as being THE BEST Obtainable.

PERSONAL OR CORRESPONDENCE INSTRUCTION

C. D. LUCAS & B. E. WOLFE MINING TUTORS

LECTURE ROOMS, PERMANENT BUILDINGS,
WRITE FOR PARTICULARS .. .. P.O. Box 6301, JOHANNESBURG

Electrical Plants in Southern Rhodesia.—II.

By H. W. Geare, A.M.I.E.E.

The Falcon Mines, Ltd.

The Falcon Mine, situated 55 miles east of Gwelo, is the second largest mine in the country, producing copper, gold and silver. Besides the ordinary reduction plant of crushers, stamps and tube mills, with concentration by means of Vanner tables and an oil flotation plant, the treatment of this ore enables the further process of briquetting the concentrates containing the sulphides of copper in which are associated also gold and silver. The briquettes are then smelted with suitable fluxes in a blast furnace. The molten matte from the blast furnace is conveyed by an electric overhead travelling crane to the converters, where, by passing an air blast of 15 lb. sq. inch pressure through the molten mass, the sulphur is burnt off, together with all other impurities, leaving a residue commonly known as blister copper, containing approximately 98 per cent. copper, together with about 10 oz. gold and 20 oz. silver per ton. The blister copper is poured into steel moulds and the ingots obtained are ready for shipment to the refining works, where, by the electrolytic treatment the copper is finally refined and the gold and silver separated. Power Station.—In addition to the electrical plant, the power station also contains the necessary blowers and compressors for the blast furnace and converters. The complete list of units is as follows: Two Parsons turbo-alternators, 1,250 K.W. capacity each, 3-phase, 550 volts, 50 cycles; two Parsons turbo-blowers, capacity 12,500 cub. ft. air per minute at 3½ lb. pressure; one Parsons turbo-blower, capacity 12,500 cub. ft. air per minute at 2 lb. pressure; two Parsons turbo-compressors, capacity 4,500 cub. ft. air per minute at 18 lb. pressure; one Bellis-Morcom vertical compressor, capacity 2,500 cub. ft. air per minute at 75 lb. pressure; one Bellis-Morcom vertical compressor, capacity 1,250 cub. ft. air per minute at 75 lb. pressure. Turbo-Generators.—These are of the Parsons standard reaction type, capable of driving alternators having a normal full load of 1,250 K.W. each at 0·8 power factor, and running at 3,000 r.p.m. A Taylor-Scotson voltage regulator is provided, and this maintains a very steady voltage under heavily-fluctuating load conditions. The turbo-generators have now been running nearly nine years, and a few figures showing their performance may be of interest. (See Table 3.) These figures compare favourably with those obtained in other parts of the world, with units of the same size. The high cost of coal is due to the fact that it has to be transported nearly 500 miles from the colliery. The average vacuum is approximately 90 per cent. of the possible, and this with the circulating water inlet temperature up to 100 deg. F. during very hot weather. Condensing Plant.—The surface condensers are capable of maintaining an absolute back pressure of 2 in. at full load with 2,900 gallons of circulating water per minute at 84 deg. F. The condensers are fitted with Parsons vacuum augmentors. All station auxilliaries are electrically driven, with the exception of the boiler feed pumps, which are steam driven, of the Weir compound type. Boiler House.—This contains four Babcock & Wilcox boilers, marine type, fitted with chain grate stokers, super-heaters, and economisers, each with a rated capacity of 12,000 lb. steam per hour normal load; also an horizontal type, of 6,000 lb. per hour capacity. Steam pressure 170 lb., steam temperature 530 deg. F., feedwater temperature approximately 120 deg. F. The ejector system of induced draught is employed, each pair of boilers being connected to a common ejector chimney. Air is supplied to the ejectors by means of rotary fans, coupled to 60 H.P. motors. The induced draught varies from 0·8 to 1 in. Reduction Works.—The Nissen stamps are driven in sets of eight, one 50 H.P., 550 volts, 3-phase motor being provided for each set. As Nissen stamps are very little used on the Rand, perhaps a few figures of their performance may be of interest. (See Table 4.) Main Shaft Ore Hoist.—The ore is hoisted from the vertical shaft down to the 11th level by means of a double drum electric winder, driven by single reduction gearing from a 275 H.P., 550 volt, 3-phase induction motor, supplied by the South African General Electric Company. The winder is designed for the following load conditions:

Weight of rock	4,000 lb.
Weight of skip	4,000 lb.
1,570 ft. of 1in rope	2,500 lb.
Total	10,500 lb.

Maximum hoist speed, 1,200 ft. per minute. Motor: Synchronous speed, 375 R.P.M.; normal rating, 275 B.H.P.; maximum overload rating when starting, 550 B.H.P. The control is of the South African General Electric Company's contactor system, with current limiting relays and cast grid resistances. On starting the motor, the driver pulls his master controller into the full running position, while the action of the current limiting relays allows each successive contactor to close only after the current has fallen to a pre-determined value. The current limits are set for an acceleration period of 10 seconds. Main Shaft Compressors—In addition to the two steam-driven compressors at the Power Station, there are two 750 cub. ft. machines at the main shaft head for supplying compressed air to the mine. By installing a 150 H.P. synchronous motor for driving one of these compressors and over-exciting it to run at a leading power factor of 0·7 with a compressor load of 130 B.H.P., the power factor of the generating station has been improved from 0·75 to 0·81.

(To be continued.)

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* Abstract of Paper read before the S.A.I. of E.E.

South African importers who are desirous of establishing connections with British manufacturers and ascertaining the best sources of supply, should avail themselves of the services rendered by the Information Bureau of the British Overseas Trade Association, Ltd., Imperial Buildings, 56 Kingsway, London. All such information is furnished free of charge, the Association having recently been formed to foster trade within the Empire, and the gentlemen who are responsible for the organisation are practical business men with many years' experience of buying and selling in the export market.

MAGNOLIA
ANTIFRICTION METAL
"FLOWER" BRAND

HAS THE LOWEST CO-EFFICIENT OF FRICTION.

KEEPS down the bill for lubricants, making BEARINGS smooth as glass and keeping them COOL under heaviest pressures and highest speeds.

Manufactured and Sold by:
The Magnolia Antifriction Metal Co. of Great Britain, Ltd.
49, QUEEN VICTORIA STREET, LONDON, E.C.

Agents for South Africa: FRASER & CHALMERS (S.A.), LTD., Johannesburg, Bulawayo and Salisbury.

INDUSTRIES SECTION.

LOCAL INDUSTRIES No. I.—S.A. CARBIDE PRODUCT THAT HAS CAPTURED THE MARKET—MONTHLY OUTPUT OF 460 TONS—EFFICIENT PLANT DISPLACING NATIVES—HIGHER WAGES FOR WHITES—GERMISTON IMPROVEMENT ON SWEDISH INVENTION POSSIBILITIES OF DEVELOPMENT.

One of the outstanding successes in the industrial development of the Rand, and a striking example of the establishment of an industry primarily for the supply of a gold mining community, but with great potentialities for a further and far-reaching extension, is furnished by Rand Carbide, Ltd., whose works are rapidly outgrowing the accommodation originally provided at Germiston.

Here there is a monthly output of carbide now reaching 460 tons. When the works started production on a commercial scale in May, 1921, the monthly output was 10 tons; six months later it reached 100 tons; in May, 1922, 200 tons. At the beginning of the present year the price of Rand carbide was decreased by 33⅓ per cent., and this reduction has been accompanied by an increase in the wages paid to the white employees, of whom there are now 25. The practice followed in regard to white labour has been to take on quite unskilled men, and as they are raised to the status of skilled men their wages also rise; as compared with the original figure their present pay represents an advance of nearly 25 per cent., and a further increase of about eight per cent. on these rates will take effect four months hence.

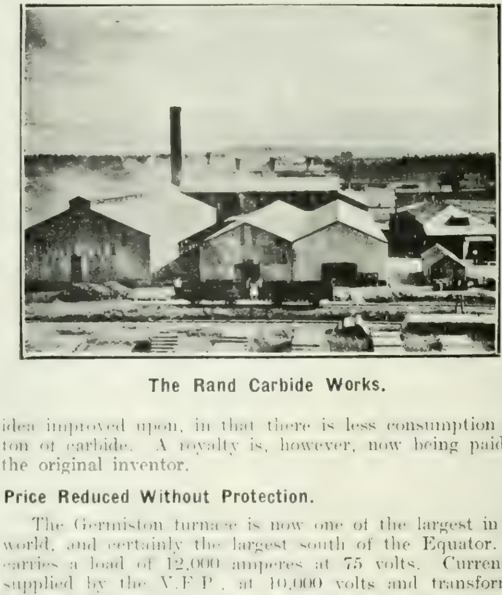
At the same time, there is a gradual curtailment of native labour, which now totals about 70 employees. Labour-saving machinery is being installed which will reduce this number and at the same time increase efficiency in the raw material shed, where the ingredients—lime and coke—are received (the former from Mafeking and the latter from Natal), crushed, screened, and mixed. Mechanical elevators, under the direction of a white employee, will replace the natives in this department. The same thing will happen when a new screening plant, which has been in very successful operation, is completed.

Native Labour Not Cheap?

The carbide will be screened and filled into the containers in one operation; it will not be seen or handled from the time it enters the crusher until it is in the containers ready for despatch; here again white labour will replace coloured, with a resulting saving in cost as well as efficiency, for, said the manager, Mr. Joseph White, M.C., A.M.I.E.E., when showing the special commissioner of the *S.A. Mining and Engineering Journal* over the works, "I differ from most engineers on the Reef in regard to the supposed cheapness of native labour; I think in the long-run it is anything but cheap. Our policy has been rather to substitute labour-saving plant under white men and to install larger units in order to give increased production. That is the real explanation of our being able to increase wages while reducing price of our produce. With the same overhead expenses and with the same white employees' supervision we have increased our production three times. My attitude is that it is far easier to raise the standard of your plant than to knock off a shilling or two from your white employees' wages."

Probably the process of carbide manufacture will be familiar to most of our readers. Briefly, the product is the result of the fusion of coke and lime mixed in correct proportions when subjected to a temperature of 3,300 deg. Cent. This temperature, of course, is obtained only by means of the electric arc. There are now installed at the Germiston works 3-phase arc furnaces, of 500 kilowatts, 1,000 kilowatts and 1,500 kilowatts. The smallest and largest of these furnaces are now fitted with the Rand Carbide modification of the Soderberg electrode, and the intermediate size is using the square amorphous electrodes manufactured by the Rand Carbide Company, and will shortly be changed to the continuous electrode process, as soon as the demand for carbide eases sufficiently to allow the necessary stoppage of the furnace for the alteration.

The use of the continuous electrode eliminates the necessity for making and baking the electrodes in the gas-fired ovens installed for the purpose. The constituents of the electrode are packed in tin containers and are baked by the heat of the arc itself. These electrodes ensure continuous operation of the furnace, the top portion of the electrode being constantly added to as the bottom end is consumed in the arc. This system is almost unique, not more than half a dozen furnaces in the world using it, and Rand Carbide was one of the first to adopt it for the purpose of this particular manufacture. Efforts were made to get in touch with the inventor, but without success, and the method was practically re-invented, and the original idea improved upon, in that there is less consumption per ton of carbide. A royalty is, however, now being paid to the original inventor.



The Rand Carbide Works.

Price Reduced Without Protection.

The Germiston furnace is now one of the largest in the world, and certainly the largest south of the Equator. It carries a load of 12,000 amperes at 75 volts. Current is supplied by the V.F.P., at 10,000 volts and transformed down to furnace voltage by the works own transformers. The Rand mines take the bulk of the carbide produced at Germiston, and now take practically no other make, very little being imported. On the occasion of the recent visit of the Board of Industries, Mr. White was able to give Sir Howard Gorges the satisfactory assurance that the tariff protection that had been put on carbide had had little effect, inasmuch as the South African industry had already established itself and reduced its price without the help of the tariff. A concession that is, however, proving helpful is the special railway tariff which has been granted to Rand carbide, as a South African product, destined mainly for local consumption. It is in fact sent to all parts of the country—from the Cape to the Congo—and is largely used for welding purposes as well as an illuminant. In the latter application it is rapidly growing in favour both in the mines and in country houses, churches and public halls.

The mines on the Rand alone use between nine and ten tons a day, some of them having increased their consumption threefold within the last three months. This is naturally having a somewhat serious effect on the candle-making industry, although last year the mines spent over £170,000 on candles and £81,634 on carbide, the former costing practically twice as much per lb. as the more modern rival illuminant. Analysis by Dr McCrae, the Government analyst, showed that Rand carbide gives 5·3 cubic feet of acetylene gas per lb. of carbide; the British Acetylene Association standard for carbide is 4·8 cubic feet per lb. The superiority of the South African product is thus conclusively proved.

Factors of Success.

Asked to what he attributed the success of the Rand Carbide factory, Mr. White said in his opinion one of the main factors was the efficiency of the furnaces installed—they were much more efficient than most carbide works in other parts of the world; the favourable geographical position of the works, the reasonable price of current, and the availability of raw material of excellent quality, were other very important considerations. Every care is taken to ensure the purity of the raw materials used. The furnaces are tapped every hour of the day and night, Sundays and holidays included; samples are taken from every tapping to ensure that the carbide maintains the highest standard. The raw materials are also analysed at frequent intervals.

Even when the finished product leaves the furnace, the same care continues to be exercised in the crushing, screening and subsequent operations. One of the qualities on which Mr. White takes some pride is the elimination of all dust. This dust is not, however, wasted; it is fed back to the furnaces with the mixture of lime and coke. Another impurity that has to be eliminated is the silicon, which in the case of high-grade carbide is found in large slabs. This is of value to the steel industry, but is not welcomed by the carbide user, who, however, might resent its presence less if it was realised that it thereby proves the high quality of the carbide; in poor quality carbide it would be diffused instead of being found in large masses. In the latter form, however, it is easily abstracted by the manufacturers and turned to profitably account.

The tapping of a furnace of carbide is a very fascinating process. An aperture is burned by an electric arc in the front of the furnace and the molten carbide flows out in a state of intense incandescence, throwing off a brilliant pyrotechnic display of sparks. This molten carbide issues at a temperature of just over 3,300 deg. Cent., but it solidifies at 2,000 deg., and when cool is crushed and screened into five different sizes, according to the use for which it is intended. Efforts are now being made to hold a reserve stock of about 300 tons at the works, the mistaken policy of many local industries having been to keep their production to so narrow a margin of demand that when an urgent order is offered it has often been found impossible to meet it, and thus the imported substitute gets its chance.

As an illustration of the precautions that are taken in the case of Rand Carbide to prevent any failure of supply it is interesting to note that in order to ensure the necessary continuous supply of cooling water to circulate in the copper electrode holders, a triple supply is available. Normally the water is pumped from the cooling dam to a water tower and then passes by gravity through the electrode holders and back to the cooling dam. A spare pump has been installed, but in case both pumps should at any time go out of commission, arrangements have been made to utilise the Rand Water Board's service, and even if this should fail, provision is made for utilising the Simmer and Jack mine water.

Fresh Fields to Conquer.

This flourishing industry has not only established itself as a success in little more than two years, but may prove the nucleus of others. Carbide itself is in a sense the "raw material" for the manufacture of other valuable commodities, such as cyanamide and cyanide, and there is every reason to believe that Rand Carbide may in the near future be followed by some very much bigger developments. Cyanide is, of course, used in large quantities on the Rand mines—last year's consumption being 9,315,593 lbs., costing £308,681. Cyanamide is perhaps a less familiar product; it is used principally as a fertiliser. In Europe by far the greater part of all calcium carbide is converted into cyanamide, of which no less than 250,000 tons was produced before the war.

From cyanamide can also be obtained various nitrogenous products—ammonia, nitric acid, ammonium nitrate, ammonium sulphate, and ammonium phosphate. As a fertilizer, commercial cyanamide is approximately equivalent to an equal weight of sulphate of ammonia, or to one and a quarter times its own weight of nitrate of soda. The process of manufacture is simple, the necessary reaction being obtained by passing nitrogen gas over red hot calcium carbide. The solid mass resulting is then crushed and sufficient water added to expel the traces of acetylene gas. The cost of cyanamide at South African ports was, prior to the war, £13 per short ton. The estimated factory cost of local production is £9 per ton. The pre-war cost of sulphate of ammonia (an equivalent fertilizer) was £15 per ton. Other derivatives of cynanamide are of value in the manufacture of explosives and in the dye industry.

"In fact," concluded Mr. White, in briefly referring to the possibilities of new industries associated with the manufacture of carbide, "I only look upon Rand Carbide as a kindergarten compared with the developments open to us; for these developments, however, our present works would be far too small, and would have to be extended to at least five times their present capacity, even to cope with the present demand for cyanide in South Africa."

It will be seen, therefore, that Rand Carbide has at its head a very capable young engineer, whose wide and varied experience in America and Australia not only admirably qualifies him for his present post, but with a vision and an eagerness for future developments. The concern is also fortunate in having Mr. W. Elsdon Dew, M.I.C.E., associated with it in a consultant capacity.

Shaft at the New Modder.

TRADE SECTION.

Week in the Mining Material and Engineering Trades.

EUROPEAN SITUATION CAUSING BUSINESS INACTIVITY—BELGIAN NOTE HOPEFUL—IRON AND STEEL CONDITIONS HERE AND OVERSEAS—BLOEMFONTEIN'S NEW POWER STATION—TIMBER AND BUILDING MATERIALS—LATEST MARKET QUOTATIONS.

General.

Merchants, with very few exceptions, will doubtless be glad to see the end of August month with its meagre business turnover, as it proved, so it is stated, one of the poorest months, so far as general business is concerned, we have experienced for some time past. The community is looking to the present and succeeding months to compensate it in some measure for past disappointments and to usher in better general business conditions. A leading commercialist called upon this week said the past month had been an exceptionally quiet one in all classes of business, but particularly so in the mining material one. The mines, he affirmed, had never been more economical in purchasing than during the last month or two, and that if they could pick on any material on their properties (previously discarded) which could by any possible means be used, it only [illegible], they did not hesitate to do so rather than come on to the market and buy new material. But of course, in view of the unsettled European situation and world economics generally, the mines cannot well be blamed for pursuing a conservative policy in the matter of buying.

There is nothing very special going on in the building trade just for the moment; the engineering shops have been exceedingly quiet, some of the bigger ones finding it rather difficult to keep themselves moving, and meeting in a very small way at that. Tendering has been going on on a fairly large scale of late, but somehow business has not resulted so far in such volume as they would like to see it. A considerable amount of local business, however, is still confidently expected therefrom shortly. It is at any rate gratifying to learn that the contract for the Government Printing Works at Pretoria—a job which will amount to over £93,000—has been secured by a Johannesburg contractor, which, of course, means work to quite a number of artisans of various kinds, and it is no secret that quite a number of jobs of similar or even greater size are in contemplation and will come along in due time. Reports from our coastal towns are satisfactory regarding business conditions ruling there, which is always one little factor in the Union's trade [illegible] despite the fact that the hinterland is at the moment exceedingly quiet. It is satisfactory also to learn that some consignments of this season's wool are now going forward, and undoubtedly when these crops are being forwarded in bulk it will be a good thing for the Union in the commercial sense. There is just a slight fear that the farmers will not get quite so good a price as was at one time expected, but as the general belief is that the wool crop will be quite heavy this year any slight fall in the price should be more than equalised by the increase of crops.

We are, said a leading member of the commercial world this week, between [illegible] in respect of the European situation. We must await with as much patience as we can command, a settlement of the affairs overseas which are retardling the business of the whole world, and which are bound to continue with even increasing force until some satisfactory arrangement is come to with France. No settlement appears to be possible by argument, as the past dreary months' pourparlers have taught us, and it is sincerely to be hoped that the powers that be will soon recognise that the question is too momentous for this kind of legal arguments, which, however necessary they appear to be in ordinary diplomatic relations, seem to the man in the street, in a case of such extraordinary importance, puerile. The community is not unhopeful that the present attitude of the British Government will eventually lead to a satisfactory settlement and pave the way to a gradual restoration of world trade. At any rate, the position ruling to-day, and which has obtained for months, cannot last much longer. We are going from bad to worse, heroic and mutually forbearing measures alone will save us. In the meantime we are looking for daylight. Let us hope that we shall not have long to wait for it! At the moment of penning these lines the cabled report of the Belgian Government to the British Note just to hand affords some glimmer of hope that eventually some *modus vivendi* may be reached whereby the existing impossible conditions may be at any rate materially ameliorated and pave the way possibly to a general European rapprochement.

Sir Lionel Phillips's letter to *The Times*, cabled out in extenso, regarding the British Government's position now and later *vis-a-vis* the Dominions, has met with a rather mixed reception here; but the magnitude of the issues at stake is fully recognised and will, it is felt, be adequately dealt with at the forthcoming conference of Dominion Premiers in London.

The result of the Turffontein election in the return of Major Hunt instead of Mr. Henry Nourse has been received by the community more as a matter of regret than surprise. Rabble tactics have succeeded in gaining a seat and vote opposed to the present Government's policy, but General Smuts's popularity and that of his Government can in no way be jeopardised thereby.

Iron and Steel.

Business on the Commercial Exchange and generally this week has been of a very quiet character, and August month has slithered out as inauspiciously as it came in. Hopes, however, are entertained that the present month may see a gradual improvement in business conditions. Prices of iron and steel material are practically unchanged.

Britain: Mail Advices: Iron and Steel Outlook.

The situation has changed during the week to the extent that there has been more buying of a general character than for some time past. The British works have scarcely taken their share of the business that has passed except in one or two lines, but the Continental steel producers appear to have booked a good tonnage of small orders for delivery during the next few months.

Pig Iron.—Cleveland iron prices have been shaded to 110s., whilst Midland iron has been quoted 2s. or 3s. cheaper. Continental iron has been offered on the basis of £4 15s. f.o.b. Antwerp, whilst Luxemburg foundry has been offered at £4 18s. f.o.b. Quotations have been received of Continental iron at 102s. to 103s. per ton delivered at works. The demand for basic and forge iron is practically dead for the time being.

Semi-Finished Materials.—German sheet bars have been sold at £7 5s. delivered British works. British works are quoting £7 12s. 6d. to £7 15s. for sheet bars. French works have been sellers at £6 10s. f.o.b., September-October delivery. The Lorraine works are quoting £10 5s. f.o.b. for wire rods.

Finished Materials.—Belgian Quotations: Steel bars, £7 16s. to £8 2s. 6d. f.o.b.; 3/16 in. to ¼ in. bars, £9 15s.; angles, £7 17s. 6d. f.o.b.; joists, £7 10s.; tees, £8 to £8 7s. 6d. f.o.b.; Czecho-Slovakian steel bars, 3/16 in. to ¼ in., £9 10s. There seems to be a general anticipation that British steel prices are on the eve of a revision, and the tone of the market is distinctly weak. Steel bars have been quoted by British makers at £9 7s. 6d. for home and £9 2s. 6d. for export, and angles at £9 15s. for home and £8 17s. 6d. to £9 for export. There has been some inquiry for black sheets, 24 gauge, and for one or two lots a 5s. premium is demanded over the schedule price of £19 f.o.b.

Tinplates.—The situation in the tinplate market continues to be depressed, and although the manufacturers, at their meeting held on July 24, decided to maintain the schedule price of 23s. 1½d., 20 by 14 basis, they met the market by making a reduction of 1s. 6d. per box on 18¾ by 14 and 20 by 10 washers, bringing the price to 21s. 1½d. and 29s. 3d. respectively.

Galvanised Sheets.—Makers are asking £18 10s. f.o.b. for 24 gauge corrugated sheets in bundles.

Tinplate Price Changes.—The average selling price of steel tin bars, which forms the basis of the sliding scale agreements in the South Wales Siemens steel and tinplate industries, was £7 18s. 3¼d. for the months of April, May and June, an advance of 3·25 per cent. on the previous quarter. Wages remain unchanged.

Quotations: Pig Iron.

Cleveland No. 1, 115s.; No. 9 ,104s.; No. 4 forge, 97s. 6d.; mottled, 95s.; basic, 100s.; hematite, mixed numbers, 100s. 6d.

Finished Iron and Steel.

Iron.—Crown bars, £12; best bars and angles, £12 10s.; tees, £13.

Steel.—Billets, soft, £9; hard, £9 15s.; bars and angles, £9 10s.; tees, £10 10s.; joists and channels, £9 15s.; sheets, singles, £13; doubles, £13 10s.; lattens, £14 5s.; plates, ship £10, boiler £14; rails, £10.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots, fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 17s. 6d. to 19s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 19s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 22s. 6d. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 20s. 6d. per cwt. Bolts and nuts, 50 per cent. discount.

Oils and Paints.

Motor spirit, 1s. 7d. to 2s. 2d. in cans; linseed oil, 3s. 10d. to 4s. 2d.; gas engine oil, 2s. 7d.; machine oil, 2s.; separator oil, 4s. 9d.; colza, tins, 4s. 9d.; petroleum, 1s. 2d. gall.; paints, in 5 cwt. lots, 70s.; red lead, 42s. 6d.; white lead, 43s. 3d. to 51s. 6d.; zinc oxide, 40s. to 48s.; turpentine, 2s. 3d.

Benzol.—The National Benzole Co. announce a reduction in the price of National Benzole mixture to 1s. 8½d. per gallon, which brings it into line with the present price of petrol. National Benzole is now retailed at 2s. 1d. per gallon.

United States.

Production of Tubes and Fittings.—Statistics compiled by the American Iron and Steel Institute show that 1,283,149 tons of cast iron pipes and fittings were produced in 1922. This constitutes a record, the previous highest total having been 1,266,245 tons in 1913. A leading manufacturer estimates that the production for the first half of 1923 was fully 40 per cent. higher than that for the corresponding period last year; 2,732,236 tons of wrought pipe and boiler tubes (171,235 tons iron and 2,561,001 steel), and 257,835 tons of seamless steel tubes (120,652 tons hot finished and 137,183 cold drawn) were also produced in 1922.

Pig Iron.—Birmingham, $25; Western Pennsylvania $25 to $26, foundry grades; basic iron $25 Western Pennsylvania.

Steel.—Concrete reinforcing bars, $2.30 per 100 lb., Pittsburg; hoops, strips and bands $3.15 Pittsburg, a reduction of $3 a ton; billets and sheet bars, $42.50.

Further shut-downs of blast furnaces are reported from various districts. At Youngstown 36 out of 46 are active compared with 43 out of 46 a few weeks ago.

Steel.—Mill operations range from 80 to 92 per cent. The demand for tinplates continues good at $5.50 per base box. Small sales of German mild steel bars are reported at $2.40.

The Eight-Hour Day.

The United States Steel Corporation has called a meeting of the heads of its subsidiary companies for the purpose of devising methods of eliminating the twelve-hour day. The Republic Iron and Steel Company has put its blooming and mill-soaking pit hands at its Youngstown open-hearth works on an eight hour day without reducing their pay.

Exchange Developments Disturb French Business.

The general trend of the French situation was less favorable in June than in preceding months. The marked decline in the value of the franc upset regular business. Large increases occurred at the beginning of July in note circulation and advances to the French Government by the Bank of France. Iron and steel production is increasing, with foreign and domestic demand improved. Railway freight traffic increased during June, and railroad receipts are higher than last year.

Iron and Steel Production Increases.

An increase in the number of blast furnaces in operation from 88 on May 1 to 90 on June 1 denotes increased activity in iron and steel production. The amount of pig iron and crude steel produced in May was greater than in March and April, but still somewhat below the January figures. The fall in the franc has temporarily stimulated foreign sales, though hindering fuel purchases, and the domestic market is also strengthening.

France Increases Iron and Steel Output.

French production of iron and steel in May was reported at 393,000 metric tons of pig iron and 388,000 tons of steel ingots and castings, as compared with 350,000 tons of pig iron and the same quantity of steel ingots and castings in April. On June 1 there were 99 blast furnaces operating, 71 ready to work, and 16 furnaces under construction or repair. The gain in production was noticeable chiefly in

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Lorraine. Further improvement will be difficult. The fall of the franc has temporarily stimulated sales abroad, but hinders the purchase of fuel.

The domestic market is strengthening, as the industry is becoming convinced that an early improvement in supplies is unlikely. Prices are now quoted at 375 francs per metric ton for foundry pig iron, and average 425 francs [illegible] for [illegible]. Blooms are selling at 490 francs and billets bring 525 francs per metric ton. Buying for the electrification of railroads is improving.

French Steel Makers and the Ruhr.

The way in which questions of politics and of trade are mixed up, says the *Ironmonger* in mail week, is disclosed in a number of articles by M. Delaisi which have appeared in the *Manchester Guardian Commercial*, criticising the policy of the Comité des Forges, the French Steel Manufacturers' Associations. The development of the whole question of the Ruhr since the signing of the Treaty of Versailles is dealt with, but the most important passages of M. Delaisi's articles relate to the part which the Comité played in the development of the policy which culminated in the French march into the Ruhr in January last. M. Delaisi describes the campaign of foreign expansion which was started by French financiers and industrialists immediately after the war, and in which, to some extent, Belgian industrialists also participated. Two years after the armistice the greater part of the iron and steel industry of Bohemia, for instance, had been brought under the control of French groups which, with other groups interested in various industries, appeared to be in a position to exercise an economic control over Central Europe. Then developed the "crisis of under-consumption," and the French iron and steel makers found that, although they controlled the Lorraine, Czecho-Slovakian, Silesian and Polish steel works it was still possible for what remained of the German steel industry to undersell them.

M. Delaisi alleges that the Comité des Forges was then faced with the necessity of making the Germans increase their deliveries of Ruhr coke and forcing them to give elbow room for the Lorraine surplus production in the export markets. With the assistance of the French Government the coke deliveries were increased from 375,000 to 559,600 tons per month, but as the Germans raised the price of the fuel, the French distributing organisation had in turn to increase its selling price to its customers from 75 francs to 90 francs in June, 1922, and to 96 francs in August, so that the position remained much as it was. Thereupon, it would appear the Comité des Forges again sought to attain for its members by political schemes what it had been unable to achieve by ordinary business methods. Three courses appeared to be open to reach the end in view: (1) direct negotiations between French and German industrialists; (2) an inter-allied iron and steel combine formed with the object of paralysing the German industrial expansion; or (3) military pressure through the occupation of the Ruhr. Opinion amongst the French steel makers was much divided as to the best course, and the advocates of each method had some part in forming the Government's policy. M. Loucheur, the ex-Minister of Finance, negotiated with the Germans, and came to an agreement with Herr Rathman, which was signed at Wiesbaden, but the execution of this agreement was found impossible owing to the divergent interests of the French and German industrialists. The second alternative was equally impracticable. The third alternative, that of military pressure alone remained, and was decided upon, with ruinous results to European trade. M. Delaisi's allegations appear to be supported by the march of events, but the Comité des Forges intimates that it proposes to issue a reply to the criticisms, and this rejoinder should be worth reading.

Germany.

The French Occupation Extending. On account of French occupation, further works in the Ruhr district have had to close. At Thyssen's works in Hamborn the coal and coke stores were seized, so that it became impossible to keep the works going, and some great coal depots of the Krupp's works at Essen have shared the same fate. The Siemens-Martin Mill No. 7, the largest of the company's foundries, Nos. 2 and 3, and the tyre rolling mill, have also been closed down.

German Ironmasters' Meeting.

The Association of German Iron and Steel Manufacturers recently held its annual meeting at Berlin. Dr. Reichert, a member of the Reichstag, gave an account of the present economic condition of the industry. The boycotting of French and Belgian iron by German consumers, he said, coupled with the isolation of the Ruhr district from the rest of the country, compelled increased importation from other countries. So far there was no iron famine in Germany, and factories using iron as their raw material were able to continue working.

Locomotives for Latvia.

The Phœnix works are said to have received a large order from Latvia for the repair of locomotives. Of about 130 engines which are out of order 40 will be overhauled at Dvinsk, 30 at Libau, and the rest will be sent to the Phœnix works in Germany. A contract for 15 new locomotives was taken at the same time.

Increase of Capital.

Die Allgemeine Electricitäts Gesellschaft proposes to increase its share capital from 900 to 1,200 million marks.

The Reparations Levy upon goods imported from Germany yielded £13,264,282 up to June 30.

German Foreign Steel Trade in 1923.

Despite the obstacles under which the German iron and steel industry has been labouring, its foreign trade balance for the first quarter of 1923 presents a favourable aspect as compared with the latter part of 1922, when a preponderance of iron and steel was imported. Exports once more outweigh imports, although but slightly, in comparison with the trade balance for the first quarter of 1922.

Shipping at Port of Hamburg.

Hamburg entries during June were 1,158 ships of 1,313,270 net tons registry, as compared with 1,262 ships of 1,215,486 tons in June, 1913. Current entries included 623 German ships of 425,374 tons, 237 British, and 18 American. Clearances in June were given as 1,522 ships of 1,403,817 tons, as compared with 1,417 ships, of 1,214,140 tons, in June, 1913. Clearances included 963 German ships, of 182,183 tons, 241 British ships, and 17 American ships.

Belgium.

Practically all mills are engaged for the next three or four months.

Rails. The Belgian works have secured an order for 15,000 tons of rails for the Argentine railways.

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FAR EAST RAND DEVELOPMENTS—PATENT RIGHTS AND THE "NEW METALLURGY"—POINTS FROM SIR GEORGE ALBU'S SPEECH—HUME PIPES—RHODESIA'S OUTPUT.

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Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, SEPTEMBER 8 1923 No. 1667

Scenes at Two Anglo-American Corporation Mines.

The Springs Mines Mill.

One of the New Shafts at Brakpan.

In this issue recent results secured by the two subsidiaries of the Anglo-American Corporation, which are depicted above, are referred to and an important announcement is made regarding the new Metallurgical Process evolved by the technical staff of the Corporation.

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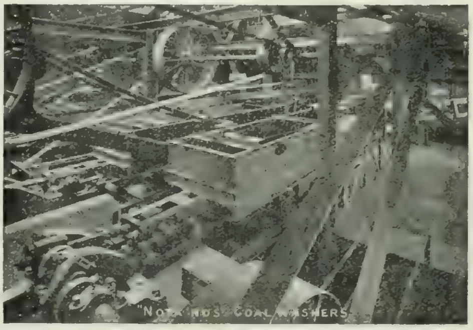

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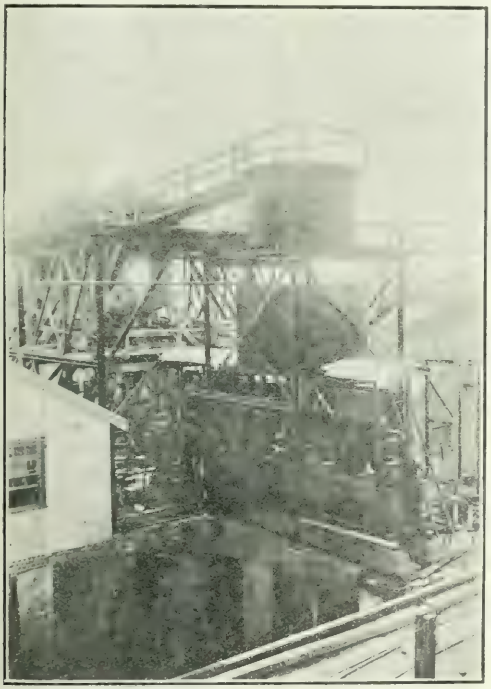
New Developments on the Far East Rand.

BRAKPAN'S EXCELLENT RESULTS—SPRINGS AND BRAKPAN EACH EARN OVER £50.000 IN AUGUST —NEW MODDER'S SHAFT—MINERALS SEPARATION PLANT AT MODDER DEEP.

Numerous features of interest are observable to-day in respect of several of the Far East Rand mines. At West Springs constructional work in connection with the new crushing and treatment plant is progressing satisfactorily, and this proposition will figure in the output list next year. At the two other active subsidiaries of the Anglo-American Group, Brakpan and Springs, development results are most satisfactory. Brakpan shares have constituted the feature of the market during the past week, and it is probable that an important announcement regarding the much improved outlook for this company will be made in the not far distant future. Both Brakpan and Springs record profits in excess of £50,000 in respect of last month's operations. At the former mine the working profit, based on the standard value of gold, was £45,748, which, with the estimated premium taking gold at 90s. per fine ounce less exchange on remittance of £5,564, brings the total estimated profit up to £51,312. At Springs the working profit on a standard basis, was £45,455, or 16s. 4d. per ton, and the total estimated profit was £50,697. Progressive returns for these two companies for the past six months have been as under:-



Minerals Separation Plant at the Modder Deep.

Brakpan Mines.

1923.	Tons.	Revenue. £	Yield Dwt	Cost s	d	Profit £	s	d
March	56,500	103,970	8.65	21	5	35,410	12	6
April. .	60,500	106,327	8.27	21	11	40,020	13	3
May . .	67,000	115,472	8.02	21	3	44,154	13	2
June . . .	65,000	118,729	7.83	21	1	47,004	14/5	
July	66,000	120,068	7.97	21	11	47,706	14	5
August . . .	71,000	120,245	-		-	51,312	—	

Springs Mines.

1923	Tons.	Revenue. £	Yield. Dwt	Cost s	d	Profit £	s	d
March	50,200	103,994	9.75	22	9	46,797	18	8
April	49,000	100,230	9.62	22	11	44,126	18	0
May	51,500	107,071	9.11	22	0	47,021	17	3
June	52,000	102,191	8.99	22	8	43,212	16	7
July	54,200	109,292	9.16	22	9	47,670	17	7
August . . .	55,700	109,166				50,697		

Modder Developments.

At the New Modder last month's profit was £145,364 and working costs were 16s. 5½d. The sinking and equipping of the new shaft is proceeding satisfactorily, and we give herewith an interesting photograph illustrating the huge concrete foundations which are being put in at this new and important hauling way.

Foundations for Headgear of New Shaft at the New Modderfontein.

Another photograph which accompanies this article, illustrates the new pilot Minerals Separation plant which is being installed at the Modder Deep and which will come into operation in the course of the next few weeks.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.

November 6th.—New Modderfontein (a), 10.30 a.m.; Nourse Mines (a), 11.30 a.m.; Consolidated Main Reef (a), 12 noon, Modderfontein East (a), 2.30 p.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

ANSWERS TO CORRESPONDENTS.

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"New Metallurgy" Patents.

ANGLO-AMERICAN CORPORATION'S TECHNICAL TRIUMPH—A MOVEMENT OF FOREMOST IMPORTANCE TO SMALL WORKERS—MESSRS. FRASER & CHALMERS TO HANDLE SOUTH AFRICAN AND RHODESIAN RIGHTS.

In the post-war history of the Witwatersrand there have been few outstanding features relative to the development and improvement of technical practice. Since the Armistice Rand problems have been rather economic and political than they have been concerned with the skill of the miner and the engineer and the metallurgist. The settlement of labour disturbances and demands and the alarming growth of mine taxation have occupied much more of the time of the managements than have questions of technique. But this is not to say that nothing has been achieved by the technical side of the industry during recent years. On the contrary, research and experimental work, which has now been translated into actual practice of the very highest importance, has been achieved, and had it not been for the fact that labour and political and purely economic problems have bulked so largely in the counsels of the industry and have thereby tended to throw the purely mining and metallurgical aspects of the industry out of proper perspective, much more attention would have been focussed on the parts which the metallurgists and chemists and mechanical, electrical and mining engineers have played in improving the ways and means of extracting ore from great depths and then in recovering the maximum precious content of the ore at a minimum of capital and operating expenditure.

The Springs Mines Experiment.

Undoubtedly the outstanding feature of the development of technical practice on the Witwatersrand during the past few years has been the adoption of what may best be termed the all-sliming process on the Far Eastern Witwatersrand. The ideas underlying this important landmark in the evolution of the treatment of the auriferous conglomerates have on several occasions been dealt with by the "S.A. Mining and Engineering Journal." It may be recalled that the first experiments were conducted at the Springs Mines by Mr. Carl Davis and the technical staff of the Anglo-American Corporation. The New State Areas Company contributed towards the cost of these experiments, and so successful was their outcome that the principles of the new metallurgy are now being employed by both the Springs Mines and New State Areas Companies, and a great development in the employment of these methods throughout a large portion of the gold mining and gold winning world seems probable.

Patents in Five Countries.

That the value of this new process is by no means confined to the Witwatersrand may be judged from the fact that letters patent have duly been granted to the Anglo-American Corporation of S.A., Ltd., covering the improved method of ore reduction worked out by the technical officials of that group, in the following countries:—

Union of South Africa.
Southern Rhodesia.
Mexico.
United States of America.

Patent rights have also been applied for in the Dominion of Canada.

Readers will be aware that this process is the one which has now been so successfully put into operation at Springs Mines, Ltd., and which may briefly be described as single stage crushing in conjunction with improved methods of tube milling. At Springs Mines, of course, the process is applied to the production of a non-residue or "all-slime" pulp.

We are further informed that Messrs. Fraser and Chalmers (S.A.), Ltd., have been appointed sole agents for handling the Union and Southern Rhodesian patent rights.

Importance to Small Workers.

On account of the relatively small capital cost involved in plant designed to operate on the lines covered by these patents and also of the high percentage of extraction that is possible, it is thought that the process offers great possibilities to the "small man," and bearing this in mind it is the intention of the corporation owning the patent rights to permit the use of this process by small mines on a royalty basis well within the limited financial capacity of the majority of small concerns. It is felt that anything that would tend to stimulate the success of small mining ventures should be made available to them on the most advantageous terms when it is borne in mind that the future prosperity of South Africa is largely bound up with the successful exploitation of the scattered and in many cases limited deposits which are known to exist throughout the country and which generally are only of interest to the small producer.

A unit plant capable of handling from 2,000 to 3,000 tons per month, [illegible] amalgamation or [illegible] can be installed at a considerably lower cost than would be incurred with the more usual type of plant.

An advertisement on another page draws attention to the fact that full particulars of the process can be obtained from Messrs. Fraser and Chalmers (S.A.), Ltd.

This announcement should prove to be of very tremendous importance to mining men in Rhodesia as well as the Transvaal, and we believe that a considerable extension of gold mining activities, particularly amongst propositions of the small worker class, as a consequence of the announcement which we are now able to make, is not too much to hope for.

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Orange River Alluvial Diggings.

ACTIVITY ON BRAKFONTEIN.

From a Special Correspondent.

In the past month or two the centre of attraction on the new diamond diggings along the Orange River has shifted from Klipfontein, now a "proclaimed" farm with only some 50 or 60 diggers, to Little Mage, and thence to Brakfontein, on the borders of the Prieska district. Brakfontein was privately prospected by a small syndicate consisting of Mr Higgs, the owner of the farm, and a few friends, and fairly promising results having been obtained it was thrown open to prospectors on a 10 per cent royalty basis some six months ago.

At first there was no great rush to the place, but as it was observed that the finds, though not astonishing, were very consistent with very few blanks, more and more people were attracted there. At the present moment it can be safely said that all around Prieska and Douglas "all roads lead to" Brakfontein, and would-be diggers on foot, donkey-cart, wagon or motor car are met every mile or so. The influx is said to be one to two hundred per week, and at the time of your correspondent's visit a week ago the place was buzzing with life and movement. The population at Brakfontein already outnumbers that of any dorp in the north west, and, including natives, must be close upon 3,000 persons.

The majority are farmers and so-called "poor whites" from all around, a good number even from Kakamas and beyond; but there is also a fair sprinkling of experienced diggers from the Vaal River. These latter are a great help to the amateurs, most of whom know nothing of the niceties of sieving, washing and sorting. One great drawback has been a shortage of water, but that is now being remedied by the erection of a small pumping plant on the banks of the Orange River; the river itself is almost inaccessible from the steepness of its banks.

The biggest stone so far found was one of 37½ carats, but the total finds are very considerable, the sales for the week ending August 15th being over £1,600, and for the following week £2,300, the average price being a little over £10 per carat. The stones are said not to be true "river-stones" as known from the older diggings, and certainly the "wash" is very different from the Vaal River "wash." It almost seems as if the Orange River diamonds were from a different source altogether, the pebbles are practically all of local origin, and might have come from almost anywhere to the north-west. A little diamond mine, apparently a sort of enlarged fissure, was worked some years ago, at Sand-drift, a little to the west of Brakfontein, and there are, of course, the newer mines at Postmasburg, so that the possibility of the Brakfontein (and Klipfontein ?) diamonds having their origin in Griqualand is by no means improbable, and if in past ages the northern tributaries of the Orange were more important than at present, one could easily account for the great banks of piled-up pebbles in which the stones are now being found. An experienced prospector at Brakfontein said that after having examined the country his opinion was that these alluvial diggings would be found to extend at least as far as Prieska itself. There is already talk of one or two other farms being opened to diggers, and active prospecting is still going on in several places. At Zwemkuil, about ten miles nearer Prieska, several small stones have been recently found by systematic washing on a small scale.

The opening up of Brakfontein, and in a lesser degree Klipfontein, has done a good deal to relieve the unemployment question around Prieska, Hope Town and other places, where drought, locusts, bad trade, and the slump in the asbestos industry had produced acute distress. Brakfontein itself may at any time now be gazetted for proclamation; it is stated that the change from private ownership to Government control is to take place without disturbance of the present claim-holders. If that can be done it will be a great boon to these people, whose lot is none too easy at present. In view of such a wholesale eviction as might be caused by proclamation and its attendant delays, Mr Higgs is holding in reserve his son's portion of the farm which contains a continuation of the diamondiferous deposit.

Of individual experiences there may be instanced the case of a young farmer who arrived in a donkey cart with a few shillings of capital, and in less than a fortnight had found diamonds to the value of over £900. Also, the man who arrived from Kakamas, borrowed a pick and shovel and got permission to work another man's claim on tribute. After working two days he had a hole some two feet deep and out of this he picked out a stone which weighed 48 carats. His own share was £350, which he collected as speedily as possible, and then left at once for his home. The sequel is interesting, but not creditable; within two days he was arrested for I.D.B., it being alleged that the stone he had "found" had been previously stolen in South-West Africa. At the time of the writer's visit a young man and his wife were to be seen working together in one claim, while their two tiny girls played about in the hole. The man wielded the pick, whilst his wife shovelled out the gravel and scraped around in the limestone bottom for possible pockets. They said that labour was so scarce that they could not obtain a single native to help them.

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General Mining and Finance Corporation.

ANNUAL MEETING DISCLOSES A GREATLY IMPROVED POSITION — SIR GEORGE ALBU'S ABLE REVIEW—OPERATIONS OF SUBSIDIARY COMPANIES--UNION TAXATION AND LEGISLATION CRITICISED—POSITION OF THE CINDERELLA AND E.R.P.M.

The twenty-third annual general meeting of shareholders of the General Mining and Finance Corporation, Ltd., was held in the Board Room, General Mining Buildings, Johannesburg, on Thursday, August 30. The Chairman, Sir George Albu, Bart., presided.

The directors' report, balance sheet and profit and loss account for the year ended 31st December, 1922, as circularised to shareholders, were laid on the table and taken as read. The Secretary then read the auditors' report.

The Chairman, in moving the adoption of the report and accounts, said: Gentlemen,—The two main points brought out by the directors' report and the accounts of the Corporation for the past financial year are, firstly, the effect of the general strike of white workmen which took place in the early part of January, 1922, and, secondly, the metamorphosis of the financial position and prospects of our Company resulting from the effects of the purchase from the Custodian of Enemy Property of the whole of the ex-enemy held shares of the Corporation and its affiliated companies. The first point was dealt with at some length by the chairman at the previous annual meeting of the Corporation, and I need only to-day emphasise the remarks appearing in your directors' report as to the serious immediate effect which the disastrous strike on the part of the employees had on the operations of the gold producing mines of our group. A comparison of the working profits of these mines for the past year with those for the previous year (1921) reflects, to some extent, the result of the cessation of operations during the period of over two months of the strike:—

	1922.	1921.
Aurora West United G.M. Co. ...	£1.420	£6.559
Meyer & Charlton G.M. Co. ...	200.415	293.399
New Goch Gold Mines	4,872*	10,353
Roodepoort United G.M. Co. ...	15.424*	13.468*
Van Ryn Gold Mines Estate ...	54,473	98,403
West Rand Consolidated Mines	3.553*	45.898

* Loss.

After the return of the men to work, on the termination of the strike, there was a welcome and decided improvement in their efficiency and energy, but notwithstanding this factor it will be seen that in the instance of three of our mines the gross revenue earned for the year fell short of the working expenditure, and for the full period a loss was sustained. Moreover, whilst the strike was on it was impracticable to continue normal development work for practically three months—a matter of some moment in the case of such mines as the West Rand Consolidated, which have embarked on comprehensive development schemes. The other leading feature of the report and accounts for the past year is of a more pleasing kind. In his remarks at our last annual meeting, the Chairman referred to the far-reaching importance of the acquisition of the ex-enemy shares of our group, and foreshadowed that the next balance sheet would probably show that the heavy depreciation shown in the annual accounts of the Corporation for so many years would almost entirely, or perhaps wholly, disappear.

Strong Financial Position.

This prediction was regarded in some quarters as being probably too optimistic, but so far from this actually having been the case, it has proved to be well within the mark. Not only have we succeeded in wiping out the whole of the £1.186.786 depreciation shown in the balance sheet at the 31st December, 1921, but we also have been able to provide further substantial amounts against any possible loss which might accrue in realising other assets of the Corporation. But, highly satisfactory as these statements are, they are not the full measure of the tale. For the first time for many years our share and debenture holdings, which appear in the balance sheet at a total valuation of £853,589, have been taken at or under the market prices ruling at the date of the accounts, and I am pleased to be able to state that, if valued at to-day's market quotations, they would show a very substantial surplus. By far and away the largest portion of our investments is in the shares and debentures of our subsidiary companies; if you will note the low figures at which most of these stocks are quoted at the present time (several of them at less than the value of their cash assets), and, further, take into account the fact that in nearly every case they are standing in our books at a price below existing quotations, you will realise the conservative basis upon which the balance sheet at the 31st December last has been framed.

Changes in the Balance Sheet.

It is usual for me on these occasions to comment on the individual items appearing in the annual accounts of the Corporation, and I will take the balance sheet first in order. Under the head of capital a very important change is apparent; the issued capital still remains at £1,875,000, but from this is deducted £847.202, representing a similar number of shares, previously held by ex-enemies, but since acquired from the Custodian of Enemy Property and held by our Corporation. This reduces our liability to shareholders to £1.027,798. As mentioned in the report of your directors, it is possible there may be a certain additional number of shares to be acquired from the Custodian under our agreement, but on this point we have no definite knowledge. However, it is to be presumed that we shall have some reliable information before the compilation of the next balance sheet, and subsequently the necessary formalities will be effected with the object of reducing the capital account by the total number of shares purchased from the Custodian. The next item is "Deposits," which at £213,386 shows an increase of £117,852 as compared with the previous balance sheet, representing moneys deposited with us by sundry companies out of their surplus funds, and on which, owing to the prevailing low rates of interest given by bankers for deposits at short call, both here and in London, they are able to obtain a rather more remunerative rate with us. "Creditors for Stock Bought not yet taken up," at £39,934, is wholly due to the Custodian of Enemy Property in respect of ex-enemy shares of companies of our group which we have agreed to purchase, but which at the date of the balance sheet had not been delivered by the Custodian. Then we come to sundry creditors and credit balances, standing in at £167.380 and reflecting a small increase over the figure in the previous account. The larger portion of this liability has been liquidated since the beginning of the current year. The next heading is "Profit and Loss Account," £11.229. I will refer to this in dealing with the details of that account a little later.

Taking the credit side of the balance sheet, the first item is "Share and Debenture Holdings in Mining and other Companies," £853,589. This shows a decrease of £886,419 as compared with the corresponding item in the balance sheet at the close of the previous year, which is more than accounted for by the drastic writing off as depreciation of £1,004,135, as shown in the appropriation account. As a matter of fact, we have, of course, actually very greatly increased our holdings by the purchase from the Custodian of very large blocks of ex-enemy shares of our subsidiary companies, which amounted in the aggregate to approximately 1,800,000 shares. I have already referred to the conservative manner in which we have valued our share and debenture holdings as now appearing in the balance sheet. Mining properties, claim holdings, real estate, etc., at £111.919 gross, reflects a decrease of £49.314, which represents the book value of house property in Johannesburg realised during the year. On the other hand, the [illegible] General Mining property has been increased from £[illegible] at December 31, 1921, to £[illegible] at the balance sheet date [illegible] General Mining Building [illegible] figure. There is an increase of £20,7[illegible] in "Advances against Securities" [illegible] London and Johannesburg Stock Exchanges [illegible] Debentures [illegible] £74,70[illegible] [illegible] The final item on the balance sheet is cash and Treasury Bills amounting to £191,792, or an increase of £[illegible]1,618 as compared with the cash position at the close of the previous year.

The Year's Profit.

The financial position [illegible] British Treasury [illegible] remaining liability under deposit [illegible] balance sheet [illegible] £29,000 [illegible] apparent [illegible] and bad debts written off are such [illegible] £13,174 appearing under this head in the profit and loss account for the previous year. [illegible] £78,878 [illegible] appropriation account [illegible] credit balance of £171,618 at December 31, 1922. [illegible] 847,202 General Mining shares acquired [illegible] and the balance of £11,229 is carried forward [illegible] the operations and affairs of these companies for the past year have already been referred to [illegible] it is only necessary for me to deal with the operations for the current year and the position and prospects of the companies at the present time.

Aurora West United G.M. Company, Ltd.

The working profit for the seven months to the end of July amounted to £14,1[illegible]. As a consequence, the company's indebtedness to your Corporation was completely paid off, and in addition it was possible to pay an interim dividend for the half-year of 5 per cent., amounting to £[illegible] 12s. 6d., on the issued capital of £[illegible] 10s. The mine is earning steady profits of over £2,000 per month, and it is therefore probable that the rate of dividend for the second half of this year will be on a higher scale. At the time of the reconstruction of the company in 1912 its liability to your Corporation amounted to £174,035, and it is therefore pleasing to record that, notwithstanding the setbacks caused by the industrial upheavals in 1913, 1914 and 1922 and the difficulties experienced during the Great War, it had been possible to liquidate this large debt out of profits without having to resort to any increase of the capital of the company.

Meyer and Charlton G.M. Company, Ltd.

Mining operations for the completed seven months of the current year resulted in a working profit of £145,229. An interim dividend of 50 per cent. was declared and paid for the half year ended June 30, bringing up the total dividends paid by the producing company to £3,315,308 10s., equivalent to 2,4[illegible] per cent. on the issued capital.

New Goch Gold Mines, Ltd.

For the first two months of the year mining operations showed only a nominal profit due to a temporary fall in grade. Subsequently the returns improved, with the consequence that the working profit for the seven months of £6[illegible] was returned. As development in the claims leased from the City Deep is mostly completed, there was no necessity for holding up any longer the surplus funds of the company which had accumulated out of the profits of previous years, and it was therefore decided in June to distribute to shareholders a sum of £55,000, equivalent to 2s. per share. The mine is rapidly approaching the end of its existence, and the cessation of active operations must be expected in the near future.

Van Ryn Gold Mines Estate, Ltd.

For the seven months from January to July of this year a working profit of £61,5[illegible] was earned from this mine. An interim dividend of 1s. 6d. per share, or 7½ per cent., was declared for the first half of the year. Working costs continue to reflect a gradual but steady decrease, and the comprehensive [illegible] work in force is more than confirming our previous anticipations as to the very large tonnage of ore capable of being mined from this additional source.

West Rand Consolidated Mines, Ltd.

In the case of this mine, also, operations for the past seven months have reflected a steady decrease in the previous level of working costs. The total working profit for the period amounted to £21,965. As foreshadowed in the chairman's speech at the last annual meeting, an active policy of shaft sinking and development is being undertaken on this mine with the object of opening up the large intact mining areas which exist on the main and battery reefs. Shaft-sinking operations are being carried out at the east and west auxiliary shafts in the main reef section, and at the Flora and Rand auxiliary shafts on the battery reef. Development at the east shaft indicates that the relatively narrow stretch of payable ore found in the upper workings is widening out in depth, and it seems probable that this shaft, which has been rather under a cloud for many years, is destined to become one of the most important producers. The west auxiliary shaft is opening up the triangular area between the western boundary and the big dyke, and the reef values are well maintained. On the battery reef section, development from the Flora shaft has shown somewhat low grade, but it must be remembered that the area now being developed is that corresponding to the old Flora mine, where the values were poor. To the dip of this area development will be adjacent to the rich Rand shaft section, and it is with the idea of opening up this area as rapidly as possible that the Flora shaft, from which it will be attacked, is being sunk with all possible speed. Should the values be found to correspond with those met with at the Rand shaft, I need hardly point out that it would be a matter of the greatest importance to the mine, and would have a marked bearing on the future prosperity of the company.

Transvaal Silver and Base Metals, Ltd.

This company's financial year ends on October 31, and for the period of nine months from November 1, 1922, to the end of last July mining operations resulted in the production of 3,820 long tons of silver-lead bullion and an estimated working profit of £42,516. It is necessary to use the expression "estimated" because the bullion has to be desilverised in Europe, and it is a matter of some three months after production before it is actually realised. The silver contents are approximately 100 ounces for each ton of bullion produced, and this, of course, represents a very valuable by-product. The profits are being utilised in the repayment of advances to the company by your Corporation, which at October 31 last amounted to £72,986, and which were made for the purpose of completing the equipment of the mine. An active policy of development is being pursued by the company, and it is most encouraging to note that, on the main lode, the value of the ore opened up by the 5th level—the lowest working point of the mine—is equally as good as the grade exposed in the levels nearer surface. The 5th level was developed from a winze sunk from the 3rd level, so as to avoid the cost of sinking No. 1 shaft until the position in regard to continuation of values in depth was made clear. In view of the satisfactory developments, however, it became obvious not only that there was justification for extending the shaft to the 5th level (which has been done), but also for continuing shaft-sinking operations. It has been arranged, therefore, to sink the shaft in the meantime to the plane of the 9th level—the question of still further sinking below this plane to be decided as development proceeds. Further shaft-sinking at the Brakfontein lode is being carried out, and the shaft is now being sunk to the plane of the 3rd level. Certain additions to the roasting and smelting plants recently have been decided upon, and are in course of erection. These comprise a set of rolls for crushing matte, a mechanical roasting furnace for pre-roasting concentrates and matte, and a reverberatory furnace for settling the matte from the slag. Quite apart from the fact that these additions will have the effect of still further improving upon the present extraction of the metals from their ores, they will enable us to treat the matte which has accumulated on the property since smelting operations were commenced, and to extract the metals therefrom.

Roodepoort United Main Reef G.M. Company, Ltd.

I have little to add to the reference to this company in the report of your directors for the past year. We are at present considering the desirability of consolidating the property of the company with those of several other companies which adjoin the Roodepoort United, and in which your Corporation holds the predominant interest.

Cinderella Consolidated Gold Mines, Ltd.

This company has come very much into the limelight recently, as the result partly of an independent proposal that the Union Government should make a prior loan to the Cinderella Consolidated of £500,000, to enable it to complete the shaft-sinking and general development schemes in operation when the mine closed down in 1914, and also because of the serious position of our neighbour, the East Rand Proprietary Mines, and the possibility of it likewise ceasing operations in the near future. It is unnecessary for me to express any opinion on the merits or demerits of the first-mentioned proposal, as it has been turned down by the Government. As regards the present slogan of a certain section of the community, however, that "the E.R.P.M. must be saved!" I have some remarks to make to-day. In the first place, I may say with all sincerity that we also are greatly impressed with the desirability of the East Rand Proprietary Mine being kept alive as long as possible, firstly, for the sake of the townships in the vicinity of the property and the general community, and, secondly, because the unprofitable operations of that mine during recent years have naturally had a very prejudicial influence on our continued attempts to raise additional capital for the Cinderella. But we very distinctly state that in any scheme which may be brought forward for saving the East Rand Proprietary Mine by amalgamation with the Cinderella property, the rights of the share and debenture holders of our mine must be reasonably safeguarded. The prevailing note of the propagandists (including the editor of and contributors to the local morning paper) appears to be that the E.R.P.M. must be saved at any cost—even to the extent of sacrificing the Cinderella Company's interests for a song. It is curious to observe the illogical attitude of these people: on the one hand they argue that the Government should not spend the taxpayers' money in financing the Cinderella because the risk is too great and our mine too doubtful a proposition, and at the same time they urge strongly that the E.R.P.M. should be allowed to acquire the Cinderella on absurdly favourable terms (so far as the E.R.P.M. is concerned), so as to enable it to prolong its existence for many years to come. Surely, if the Cinderella is such a poor proposition as to be unworthy of financing (after a million and a half pounds have been spent on equipping and developing the property), it must follow that it is practically of no real value to the E.R.P.M., and therefore that the proposed confiscation of our property would not save the E.R.P.M., but only possibly prolong that company's existence for a very limited time, whilst it worked out the Cinderella [illegible].

Cinderella and E.R.P.M.

Again, if our property is such an unattractive mining proposition, why are we criticised because of our inability during recent years to raise the big money still required to continue the sinking of the central shaft and to carry out a comprehensive scheme for the adequate development of our extensive mining area of over 2,000 claims? From time to time we, as the controlling house, have been responsible for raising working capital for the Cinderella Company, which has amounted in all to approximately £1,500,000, and we have spent practically all this money on the equipment and development of the mine. Per contra, the E.R.P.M. has some £600,000 or £700,000 of available cash at its disposal, a large portion of which was actually earmarked for development of its property. How, then, can it be argued that we are the people in fault and that we are playing a dog-in-the-manger game? For the last nine years, since just before closing down the Cinderella, we have constantly intimated to the E.R.P.M. that we are willing to consider any reasonable proposals for the acquisition by it of our property. So far, we have received no proposals of this nature. If an amalgamation of the properties of the two companies is likely to be of real benefit to the E.R.P.M.—as I feel most confident it would—then surely that company can afford to, and should, offer reasonable terms for the property of the Cinderella. That is the gist of the whole matter. In the meanwhile, without any reference to us, or, so far as we know, to the board of the E.R.P.M., the Minister of Mines has recently announced his intention to appoint "a small impartial Commission with the instruction they should act as arbitrators or 'honest broker' between the two companies, and bring about a settlement or arrangement by which both mines could be worked. The Commission will no doubt keep in touch with the Government, and the Minister sincerely trusts that with the backing of public opinion in this matter a voluntary arrangement will be come to. Failing such an arrangement, it would be an instruction to the Commission to report to the Government the terms they think would be a reasonable arrangement between the two companies. The terms will be published in a Blue Book and laid before Parliament at its next session so that Parliament which represents the public interest, will have all the facts before it and will be in a position to deal with the situation, if necessary."

So runs the official announcement, and I think I may safely say that it is without parallel or precedent in any important and civilised country, or in the case of any responsible Minister of such a country. The idea of forcing two companies, with entirely different share and debenture holders, into an amalgamation, willy nilly, and, if necessary, by special Parliamentary legislation, is certainly a novel one. "Ex Africa semper aliquid novum" is an ancient motto which has materialised many times since it was first written, and it would appear that the Minister of Mines is desirous of again illustrating it. As a matter of fact, except for the extraordinary manner in which the two companies have been ignored in connection with the proposal, we, as representing the Cinderella, have no objection to a Commission. We have a perfectly good case for investigation, and we do not fear the result of any inquiry by competent, unbiased and fair-minded people. But we do strongly object to the Minister's intimation that if the two companies could, for some reason or another, come to an amicable arrangement, Parliament may be asked to carry a [illegible] of the two concerns on terms which might either conceivably be inequitable to one or both companies. That is a proposal which would infringe on the rights of private ownership, and would have a grave and far reaching effect on the credit of any country the Government of which sanctioned it.

I have dwelt at some length on this subject because of its [illegible] nature, and also because of its vital interest to us, especially in view of the fact that your Corporation holds half of the share capital and half of the debenture issue of the Cinderella Company.

New Steyn Estate Gold Mines, Ltd.

This is one of the companies holding large areas of mining ground adjoining the Development United which would come into the consolidation scheme to which I have already referred, if it is eventually decided to carry it into effect.

Rand Collieries, Ltd.

I have nothing to report in connection with the position and affairs of this company.

Legislation Criticised.

When presiding at the annual meetings of our Corporation in past years I have on many occasions had reason to draw attention to the inequitable manner in which the Parliament for the time being and other governing bodies have loaded taxation on to the mining industry, and I regret that to-day I again have to refer to the lack of a due sense of proportion which always appears in evidence when these taxing bodies discuss and legislate directly for the industry. In the last session of the Union Parliament the Minister of Mines introduced three Bills vitally affecting the gold mines, viz., a Bill to amend the existing Precious and Base Metals Act, a new Miners' Phthisis Bill, and a Conciliation Bill. Each of these contained what we justifiably regard as clauses of a most objectionable and astounding character. I do not propose to discuss them at any length to-day, because they were very ably and fully dealt with by the President at the last quarterly meeting of the Chamber of Mines, and, moreover, all three Bills were withdrawn towards the end of the session. But I must refer to one of the clauses of the Bill to amend the Precious and Base Metals Act. This clause (29) is just about as confiscatory and ruthless as could be devised even by a Russian Soviet. It gave powers to the Minister, in the case of a mine shutting down for any reason, to dispose of the property—machinery and plant, buildings, shafts, developed claims, and lease area—on any terms he (the Minister) might deem fit to any person or persons he might choose!

The President of the Chamber, in the speech to which I have referred, gave the instance of the Cinderella Consolidated as illustrating what might happen if this clause were put into effect. It would be difficult to improve on his remarks on the subject, and I therefore quote an extract from them:—

> If, however, this or any similar clause ever becomes law, it will be in the power, and will probably be in the interest, of the Minister of Mines for the time being to sell the whole of the Cinderella and its plant for a mere song; and the owners and the debenture holders—to the latter of whom the Cinderella is in debt in respect of principal and accrued interest to an amount of £717,500—will have no remedy whatever.
>
> I have said that this will probably be in the interest of the Minister of Mines. There is no doubt that the township of Boksburg is in a very precarious condition, and it is likely enough that to secure that township for a few more years from the ruin which threatens it might bring the Government a great deal of immediate support. There is, unfortunately, no security that we shall have in office a Government farsighted enough to perceive that such immediate support will be dearly bought at the price of the destruction of property and credit which will inevitably follow. Every mine must sooner or later close down, and in every such case there will be the danger of the Ministry of the moment seeking to secure itself a few more months of office by sacrificing the property of that mine's shareholders and debenture holders to any speculator who will promise to keep the mine open for a time longer.

Gentlemen, it is a matter for surprise that we view with the gravest concern the action of a Minister of the Crown who not only introduces a Bill with such amazing clauses, but is also presumably responsible for their drafting. There is no doubt in my mind that Clause 29 was definitely aimed at the Cinderella, and, but for the strong protests made by the Chamber of Mines and ourselves, it is quite possible that the Bill might have passed through the House with the clause unchallenged, because of its sinister character being unnoticed by members.

A Contrast in Taxation.

How can we retain any feeling of security under such circumstances? Nowadays we seem to be always in a state, when Parliament is sitting, of wonder and apprehension as to what inequitable form the next Bill affecting the industry will take. This is bad for us, but it is bad for the country too, because overseas there is already evident an increasing feeling of doubt and distrust amongst financiers and investors as to what additional burdens may be placed on our shoulders by unwise and hasty legislation. This is not an idle statement; constantly in the leading financial and other newspapers in England one now sees references and criticisms in this regard. Furthermore, there is an increasing tendency on the part of financial houses which, up to comparatively recently, invested their money largely in South Africa, to withdraw their capital from this country as opportunity offers, and to seek avenues for it in other parts of the world where it meets with more reasonable consideration from the governing bodies. In this connection there was an interesting comparison given recently of the taxation imposed on gold mining companies in Canada with that levied in South Africa. Two companies earning practically the same revenue for the 12 months ended June 30, 1921, were taken as an example—the New Modderfontein here and the Hollinger Gold Mine in Canada. Whilst the New Modderfontein paid $1,102,415 in taxes, the Canadian mine paid only $129,889. Surely this is a most serious matter for a "young" country like South Africa, which is crying for development and expansion—and, of course, the additional capital from outside to effect it? How is it possible for us, for instance, to influence people on the other side of the water to provide new capital for the Cinderella when the responsible Minister in the Union Parliament seriously proposes confiscatory legislation which would rob the providers of any kind of security. I simply cannot understand the mental attitude of the Minister. The Great War, with its resultant impoverishment of most of the nations of Europe, is largely responsible for our inability to obtain outside capital for such concerns as the Cinderella. Yet, during the war, at the urgent request of both the Imperial and Union Governments, we continued to run our mines for periods in which we were making heavy losses on the production of gold, and, in addition, gutting our properties of their higher grade ore in order to meet the ever increasing working expenditure consequent on the high cost of mining material and wages. For this sacrifice of the interests of our shareholders and ourselves we asked no meed of praise; the times were abnormal and most people had to suffer in one way or another. Nor do we seek credit for the half-pay allowances made the dependents of those of our employees who were on active service—although in the case of several of the mines of our group these payments had actually to be met out of the coffers of your corporation, as the companies in question were incurring losses and had no available funds. But when, after great struggles, we begin partially to recover from the aftermath of the war and from the effects of the strike last year, it is most disheartening to find ourselves threatened with legislation of the most harmful and entirely unnecessary nature. I say, in the name of common sense and reason, leave us alone for a time; give us a peaceful period in which to recover from the hard knocks we have experienced.

Native Labour.

Once more we are experiencing a shortage of native labour on our mines, due in part to the good crops which have been gathered in the native territories, but in part also to the restrictions imposed by the Union Government on the recruiting of boys from Portuguese East Africa. I can quite appreciate the desire of the Union Government that we should give preference to natives from British South Africa, even if, for economic reasons, I cannot agree with the principle. But the effect of the restriction has been unfortunate in two directions. It has decreased the output and profits of quite a number of mines; that is the direct result as far as the mining companies are concerned. It has also intensified the unemployment problem, for it stands to reason that if operations are diminished to any real extent by the employment of less natives, there must be less work for their white supervisors, and a certain number of white employees are temporarily discharged. For these reasons it is regrettable that the Government adopted these restrictive measures some months ago. A stable native labour force for the mines is a necessity if we are to maintain operations on an efficient and satisfactory basis, and the Government should be very chary indeed of interfering with our regular supply. As is evident at the present time, the consequences adversely affect our returns, but they also recoil indirectly on the Government and the State. I am hopeful, however, that the shortage will be gradually made good during the next few months.

White Labour.

I am thankful that on this occasion I have very little to say on the subject of white labour on the mines. We have had, on the whole, a peaceful experience since our last annual meeting. There have been a few Conciliation Boards, called in terms of either the Standing Conciliation Board or the Industrial Disputes Act, but these have generally been able to deal satisfactorily with the particular dispute. My own impression is that our workmen as a whole desire to be left alone by over-zealous representatives of the trade unions, and to pursue their respective vocations without looking for or being led into trouble. The result is that we are getting better efficiency, work, and co-operation than for many years past.

This concludes my review of the chief interests held by our Corporation, and of the more important matters affecting the mining industry as a whole and our group as a portion of it. I have endeavoured to give you as clear an idea as possible of the vast improvement in the affairs and prospects of our company which has been effected during the past year, and I need hardly assure you that we shall strive to make the best possible use of our strengthened resources, and to take every favourable opportunity of still further improving our position. As you will, I think, understand, we have had a harassing struggle during the many vicissitudes of the last nine or ten years, and at times the outlook seemed hopeless. Now, however, that the tide has turned, we shall go forward with renewed energy in the effort to further the interests of the Corporation and of the group of companies which we control.

The Dividend Question.

I have received a number of letters expressing the hope, and have seen references from time to time in the London Press to the possibility, that I may to-day announce the declaration of a dividend to shareholders of the corporation. I much regret that I am not in that happy position. As you will have noted from the accounts, the profits earned during last year were allocated towards providing for the large amount of depreciation written off the assets of the corporation, and we only carried forward a small balance to the current year. The present financial year does not end until December 31 next, and on its expiration we shall take stock of the position and the result of the year's operations, after which we shall be able to decide whether and to what extent, a distribution is advisable and justified.

It now only remains for me to express, as I do with great pleasure, the board's sincere appreciation of the loyalty of and the services rendered by the officials and staff of the corporation, financial and technical, here and overseas. I have one note of regret to record, that we are losing the valued services of two of our oldest officials, in Mr. J. A. Blackburn, who has for a generation been the secretary of our Company Department in Johannesburg, and Mr. T. F. Hearne, who for almost as long a period has been at the head of our companies secretarial department in London. Both these gentlemen are retiring because, after so long a period of unremitting work, they desire a less strenuous time during the later years of their lives. I am sure you will join with me in thanking them for their long and valuable services and in wishing them health and happiness in the future.

The motion adopting the report and accounts was seconded by Mr. Arthur French and carried unanimously.

Mr. Jacob Freudenthal, who retired from the board of directors in terms of the articles of association, was, on the proposition of Sir George Albu, Bart., seconded by Mr. S. Benning, unanimously re-elected.

It was resolved on the motion of the Chairman, seconded by Mr. W. P. C. Hastie, that the auditors, Messrs. Douglas, Low and Co., in Johannesburg, and William S. Ogle, Sons and Porter, in London, be reappointed for the current year and that the remuneration for their services during the past year be 225 guineas for Messrs. Douglas, Low and Co., and £150 for Messrs. William S. Ogle, Sons and Porter.

This concluded the proceedings.

THE UNION'S GRAIN ELEVATORS.

Sir William Hoy, General Manager, South African Railways and Harbours, in his latest bulletin, deals with the Union grain elevator system. He states: It is anticipated that the Capetown Port elevator and 17 of the larger country elevators will be opened not later than March next, and 17 of the smaller country elevators by about the following July, so that a considerable portion of the next maize crop should be handled in bulk through the grain elevators. A description of the elevator system was given in the bulletin dated April 9, but it is now possible to publish diagrams and fuller details of tariffs, regulations, etc., which will better explain the working of the system to those interested. The storage capacity in tons of port elevator, Capetown, is to be 30,000; of the 33 country elevators in maize areas, 106,600; and of one elevator at Moorreesburg (wheat centre), 2,600, a total of 139,200. Assuming that the country elevators can handle five times their storage capacity in a year (which should be easily accomplished), 533,000 tons could be passed through the 33 country elevators in the maize growing areas. Although the storage capacity of the various sizes of elevators varies considerably, it will be noticed that the capacity of the elevating machinery is identical for sizes 6, 7 and 8, and the same applies to sizes 3, 4 and 5; also that the hourly capacity of the machinery is between three and five times as great as the average tonnage per hour the elevator would be required to do on the basis of handling five times its storage capacity in four months. This indicates that the machinery is capable of doing much great tonnages than those indicated above, particularly in respect of sizes 2, 3, 4, 6 and 7. The limiting factors governing the handling capacity of the elevators are not so much the machinery as the rate at which the operators can examine and grade the grain and clear the ox wagons. Granted sufficient storage accommodation and rapid release of grain from the elevators through plentiful shipping supplies and deliveries to local buyers, there is little doubt that the country elevators are capable of handling much greater tonnages than those indicated above on a five times turnover basis. The bulletin contains extremely interesting details in regard to loading into the elevators, and such matters as delivery of grain from the elevators, bagging, tariffs, railway rates, etc. New regulations, specimens of elevator receipts are also given, together with other information which will prove of great value and advantage to farmers.

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TOPICS OF THE WEEK.

General Mining and Finance Corporation's Annual Meeting.

The 23rd annual general meeting of shareholders, of the General Mining and Finance Corporation, Ltd., was held in Johannesburg on August 30th. The Chairman, Sir George Albu, Bart., presided. In a lengthy and important speech, which is reproduced in full elsewhere in this issue, the Chairman referred not only to the results secured by the parent organisation, during the year ended with December last, and to the positions of the subsidiary companies of the group, but he dealt also with several matters which vitally affect the gold mining industry of the Witwatersrand generally.

In the course of his remarks Sir George spoke of the position of the Cinderella Consolidated Mines *vis a vis* the East Rand Proprietary Mines, and, he made the important point, that, whilst everybody, including himself and his associates, was most anxious to see the E.R.P.M. Mines kept alive as long as possible, the rights of the share and debenture holders of the Cinderella must be reasonably safeguarded. Sir George remarked: "the idea of forcing two companies with entirely different share and debenture holders into an amalgamation, willy nilly, and, if necessary, by special Parliamentary legislation, is certainly a novel one. "Ex Africa Semper Aliquid novum," is an ancient motto which has materialised many times since it was first written, and it would appear that the Minister of Mines is desirous of again illustrating it. . . .

"We have a perfectly good case for investigation and we do not fear the result of an inquiry by competent, unbiassed and fair-minded people. But we do strongly object to the Minister's intimation that if the two companies cannot, for some reason or other, come to an amicable arrangement, Parliament may be asked to force a wedlock of the two concerns, on terms which might quite conceivably be inequitable to one or both companies. That is a step which would infringe on the rights of private ownership, and would have a grave and far-reaching effect on the credit of any country, the Government of which sanctioned it." Sir George also dealt with the question of taxation and referred to the fact that the New Modderfontein Gold Mine in South Africa, pays in taxation more than double what the Hollinger Gold Mine, in Canada, is taxed, although the revenue earned by the two companies was practically the same during the year ended with June, 1921. Sir George Albu referred, in the final portion of his speech, at some length, to white and native labour. With regard to the European employees of the group he remarked:—"My own impression is that our workmen as a whole desire to be left alone by over-zealous representatives of the trade unions, and to pursue their respective vocations without looking for, or being led, into trouble. The result is that we are getting better efficiency, work, and co-operation than for many years past."

As to native labour, Sir George referred to the unfortunate effect of the recruiting restrictions in Portuguese territory, which had, he said, intensified the unemployment problem, "for it stands to reason that if operations are diminished by the employment of fewer natives, there must be less work for their white supervisors, and a certain number of white employees are temporarily discharged."

The G.M.E's. Report.

The report of the Government Mining Engineer for the year ended December 31st, 1922, has now made its appearance, and in our next week's issue we propose to deal at length with some of the various important statements and statistics contained in this voluminous report. It may at the moment be remarked that the value of mineral output of the Union during last year was, according to the report, £38,614,081, as compared with £51,839,724 in 1921. The contraction is in large degree due to the strike on the Transvaal gold and coal fields, the shrinkage in the value of the gold premium and the restricted demand for coal and diamonds. The report shows that the value of stores, etc., consumed on mines was £13,000,000, whilst salaries and wages absorbed 14 and a-third millions sterling. Figures showing how efficiency has increased on the Witwatersrand are given, and it is shown that over 49 per cent. of the employees of the Witwatersrand gold mines were born in South Africa.

The Mines and the Farmers.

The question of the dependence of the Agricultural Industry on the mines has recently aroused much acrimonious discussion in the Nationalist Press and several writers have been at pains to refute certain facts and figures brought forward in a brochure recently issued by the Gold Producers' Committee of the Transvaal Chamber of Mines and which clearly shows what good customers the gold mines were for the farmers. The whole question has recently been debated at considerable length in "The Star" by Mr. E. Glanville, the well known writer on agricultural matters, who, in the course of a closely studied article remarks:—

The gold mines in 1921 spent £1,173,000 on farm products and the statement was made that this represented only a share of the total of farm production which was placed at £73,800,000, while Mr. C. W. Malan, M.L.A., said at Port Elizabeth that the mines should be taxed more heavily. Yet the mines in twelve years have, as pointed out by Mr. W. Gemmill, Actuary to the Chamber of Mines, contributed £36,000,000 in direct taxation, and they have also provided the largest market in the Union for farm produce. Why then, should Nationalist speakers so persistently impoverishing the surplus of the mines, though they must know their value? They are not blindly discontent with the mines without an object, and I suggest that they have two objects in view: (1) to see that any scheme that may emerge for the taxation of the farmers' land, and (2) to prepare the way for new mining taxation. In either case they must start from a sound basis, and at present their figures are wrong.

I have no wish to argue for the taxation of land, because I believe land and its products are heavily taxed by the vagaries of market prices and by the ills of climate and disease; but I think we should have a correct view of the value of land production and of the extent to which it depends on the spending power of the mines. Now £73,000,000 is not a correct statement of the value of land production. The census bureau estimated the farm value of all products in 1921 at £55,745,000, and the market value at £73,832,000 after the consumers had added £18,087,000. But 55 millions was an outside figure, since milk was estimated at nearly 14 million pounds sterling on the full number of 2,280,000 cows, as though all were in milk, whereas less than a million were so classed. Also all cattle slaughtered were valued at £10 10s. each, whereas the cattle farmers have been complaining that values have dropped to £1, £4, and £6, and that numbers have been culled. A fair estimate of the farm value of land products would be £45,000,000. When the farm value reaches £73,000,000 farmers will pay more in income tax than they did in 1921, when, out of a total of taxable incomes for the Union, farming paid on only £4,309,640, out of which companies were taxed on £1,155,429. Individual farmers paid on a taxable total of £3,154,211 out of a total for the Union of £66,427,000.

In the Cape individual farmers paid on £829,000, in Natal on £905,000, in the Transvaal on only £383,000 out of a total of 32½ million, and in the Free State on £1,055,000. Individual farmers paid only 5 per cent. of the total sum taxable for individuals.

The effect of farming and gold mining on the movement of population may be seen in the census over the ten years 1911-1921. The movement into the towns over that period was 189,222 as compared with 64,952 into the country. Here are the figures:

Town Population.

	1911	1921.	
Cape	289,107	359,054	(plus) 69,977
Natal	62,732	81,154	(plus) 18,422
Transvaal	251,468	332,524	(plus) 81,056
O.F.S.	54,979	74,746	(plus) 19,767
Increase			189,222

Country.

	1911	1921.	Difference
Cape	291,664	291,525	minus 139
Natal	35,114	55,684	(plus) 20,570
Transvaal	168,446	210,961	(plus) 42,555
O.F.S.	119,844	118,810	(minus) 6,034
Increase			62,952

Natal increased her country population by 57 per cent. and Transvaal by 25 per cent., while Cape increased her town population by 27 per cent., Transvaal 32 per cent., and Orange Free State by 26 per cent. The set of the population into the Transvaal, both town and country, was due to the spending power liberated by the mines.

Wages Paid.

By Transvaal gold mines:	
White (19,534)	£10,640,521
Coloured (171,132)	5,964,528
	£16,605,049

This is almost equal to the year's value of land exports, and amounts to £1,383,754 distributed in a close area, month by month, to the making of the best market in the land for farmers. In addition the gold mining companies made large purchases for the compound boys, placed at £1,473,000.

The gold mines of the Transvaal in 1921 purchased stores for consumption to the total value of £11,383,223. This amount included the sum spent on farm products, making with the amount spent on wages a total of £30,068,272. This sum is released year by year for the services of trade, the support of railways, the benefit of revenue, and the good of the land industry. Beyond those immense benefits to the daily life and work of the Union, the mining industry supports the Reef population.

The Reef Population.

	Whites
Johannesburg	150,286
Krugersdorp	13,430

Nowhere else in the Union is there such a number of consumers gathered in one such small area, with the result that the farmers have here their largest market. The municipal market sells produce yearly to the value of £1,200,000, and the municipal cattle market turns over from four and a half to six millions per year. In addition there is the huge supply of produce that is delivered by rail for the numerous shops that deal in foodstuffs. There is a market then on the Reef directly sustained by the gold mines which approximates £11,000,000, in place of the sum minimised by Nationalist critics to £1,400,000. The Johannesburg market handles 110,000 cattle a year, while the total number of cattle slaughtered is given at 323,156. Johannesburg handles a third of the total, a percentage that leaves no room for doubt as to the true position played in the fortunes of the farmers by the great reef market, that is directly sustained by the gold mines.

The cattle farmers said they had been ruined by the slump in prices. One of them said that the farmers' children had been crucified on the cross of sentiment. Well, if the gold mines closed or were taxed out of existence, then away would go one-third of the internal market for land products. If the critics' value of £73,000,000 were correct, then the farmers would lose, at one stroke, £21,300,000 should the support of the gold mines be withdrawn; or 13 millions out of 45 on the lower estimate. The farming industry lives by the gold mines, for internal markets purchase £27,847,000 as compared with £17,153,664 for exports. And to these enormous services to the land industry, amounting to one-third of the market consumption, must be added the direct revenue paid by the gold mines to the State, placed by Mr. Gemmill at from £3,000,000 to £4,000,000 per year.

Notes & News.

The Walfish-Rhodesian Railway.

The idea of a railway connecting Walfish Bay with Matabeleland is being taken up by correspondents in the "Bulawayo Chronicle" who are supporting Sir John Hewat's recent advocacy of the scheme. It is suggested, however, that the Central Kalahari is the best route, and that the line should make for Bulawayo with a junction at Plumtree or Francistown. The argument is that this would best serve the Union and Rhodesian trade routes, and also the great ranching areas of Matabeleland, Bechuanaland and the better portions of the Kalahari and South-West Africa, while the Wankie coal would be more easily transported than by the more difficult, swampy route proposed further north. Rhodesians who know the Kalahari declare that a central railway would give the Transvaal the best access to Walfish, avoiding the arid, sandy areas further southward.

Mr. Henry S. Potter, of the firm of Henry S. Potter, Ltd., and Managing Director of the South African Rubber Manufacturing Co., Ltd., is leaving for England on the "Kenilworth" Castle, sailing on September 14th.

August Output: Group Returns.

ANGLO-AMERICAN GROUP.

The following are the results of operations for the month of August, 1923:—

	Tons milled	Working Costs per ton milled	Value of Gold Declared	Yield per ton
		s. d.	£	s. d.
Brakpan	71,000	22 11·8	120,245	33 10·4
Springs	55,700	22 10·5	109,166	39 2·4
Totals and averages	126,700	21 9·8	£229,411	36 2·6

	Working Profit based on standard value of Gold Total	per ton	Estimated Premium taking gold at £4/10s. per fine oz. less Exchange on Remittances	Total Estimated Profit
	£	s. d.	£	£
Brakpan	45,749	12 10·6	5,564	51,312
Springs	45,455	16 3·9	5,242	50,697
Totals and averages	£91,203	14 4·8	£10,806	£102,009

CENTRAL MINING/RAND MINES GROUP.

The following are the results of operations at the mines of the Central Mining/Rand Mines group for the month of August, 1923:—

Company.	Tons Crushed.	Yield in Fine Gold Oz.	Estimated Value.	Estimated Profit.	Estimated Working Cost per ton.
City Deep ...	101,000	41,768	£184,300	£70,033	22 7
Con. Main Rt.	47,000	16,920	74,575	10,819	27 1
Crown Mines .	208,000	65,867	290,822	91,476	19 2
Dur. Rood. Dp.	35,500	10,627	46,787	4,481	25 3
E.R.P.M. ...	131,000	30,576	134,916	30	20 7
Ferreira Deep .	30,500	9,496	41,886	9,572	21 2
Geldenhuis Dp.	57,500	13,758	60,576	1,136	20 8
Modder B. ...	67,500	31,543	140,455	75,153	19 4
Modder East .	29,000	11,889	52,462	17,612	24 0
New Modder	116,000	54,623	240,791	145,364	16 5
Nourse Mines .	16,300	14,005	61,795	7,238	23 6
Robinson	13,600	3,611	15,839	5,895	14 7
Rose Deep ...	53,400	12,918	56,959	12,037	16 9
Wolhuter	30,300	7,186	31,703	2,010	19 7
Village Deep	47,500	15,113	66,687	7,058	25 1
Tls. & avgs.	1,012,100	339,900	1,500,553	459,914	20 6

General Note.—The tonnage milled of the Consolidated Main Reef Mines and Estate, Ltd., and Village Deep, Ltd., has suffered on account of a scarcity of native labour.

The valuation of gold has been taken at £4 10s. per fine ounce, less 1s. 9d. for exchange and realisation charges.

TRANSVAAL GOLD MINING ESTATES.

The following are the particulars of the output for the month of August, 1923, in respect of the above company: Central Mines: Tons crushed, 12,600, yielding 4,311 fine ozs. Elandsdrift Mine: Tons crushed, 1,800, yielding 1,062 fine ozs. Vaalhoek Mine: Tons crushed, 2,000, yielding 716 fine ozs. Estimated value of month's output, £26,758; estimated profit for the month, £4,830. Note.—The gold output for the month is valued at £4 8s. per fine ounce net, after allowing for exchange and realisation charges.

NEW CONSOLIDATED GOLD FIELDS.

The following are particulars in regard to the outputs for the month of August, 1923, of the undermentioned companies of the New Consolidated Gold Fields Group:

Company.	Stamps Running.	Tube Mills Working.	Tons Crushed.	Gold declared Fine Oz.	Working Costs per Ton Milled	Total Profit Declared, including Sundry Revenue.
Simmer and Jack.	320	7	66,100	13,989	16 8·8	£7,436
Robinson Deep	180	10	75,000	23,271	17 8·6	36,728
Sub Nigel	30	2	9,900	6,047	40 1·4	6,801
Totals	530	19	151,000	43,307	—	£50,965

The revenue derived from gold for the month of August is calculated at the rate of £4 10s. per fine ounce, less estimated gold realisation and exchange charges of 2s., or a net figure of £4 8s. per fine ounce.

In addition to above results the following ounces fine gold were recovered from tube mill plates due to change over to corduroy tables: Simmer and Jack, 79; Robinson Deep, 171.

The directors of the Simmer and Jack, Robinson Deep and Sub Nigel have decided to do away with the reserve gold account and to liquidate the amounts standing thereto.

GENERAL MINING AND FINANCE CORPORATION.

The August operations of the producing mines of this group were as follows:—

Company.	Tons Crushed.	Total Cost.	Cost per ton	Total Revenue	Profit.
Aurora West ...	12,750	£12,868	20·18	£14,906	£2,038
Meyer & Charlton	13,900	15,630	22·49	35,721	20,091
New Goch... ...	15,600	14,586	18·70	16,978	2,392
Van Ryn Estate	34,900	33,978	19·47	42,521	8,543
West Rand Con.	36,000	38,174	21·21	42,267	4,093
	113,150	£115,236	20·37	£152,393	£37,157

In calculating the revenue, gold has been taken at a value of 90s. per fine ounce, less estimated realisation charges.

Transvaal Silvers.—The output of this company for August totalled 413 long tons of lead bullion, containing 12,833 ounces of fine silver representing a total value, based on the latest quotations for the metals, of approximately £15,472.

UNION CORPORATION GROUP.

Particulars of the operations of the companies of this group for the month of August, 1923:—

Company.	Tons Crushed.	Fine Ozs.	Revenue (Including) Sundry Rev. Total
Geduld Proprietary	68,500	23,984	£108,340
Modder Deep	45,900	24,392	109,621
Totals and averages	114,400	48,376	£217,961

Company.	COSTS. Total.	per ton.	PROFIT. (Including) Sundry Rev. Total.
Geduld Proprietary	£64,918	18 11	£43,422
Modder Deep	£39,411	17/ 2	£70,210
Totals and averages	£104,329	—	£113,632

The above results are arrived at by valuing gold at 90s. per fine ounce.

Inyaminga Petroleum, Ltd

FLOTATION OF OIL ENTERPRISE WITH ENCOURAGING PROSPECTS IN MOZAMBIQUE.

RIGHTS OVER 42.000 SQUARE MILES.

We are in receipt of a copy of the prospectus of "The Inyaminga Petroleum, Ltd.," which has been registered in Southern Rhodesia with a capital of £60,000. The directors are Messrs. F. C. Dumat, of Johannesburg, solicitor, A. B. Lawley, of Beira, of Pauling and Co., Ltd., and J. I. Kopeck, of Salisbury, Director of Companies, and two others to be elected by the shareholders after allotment. The consulting geologist is Mr. F. P. Mennell, F.G.S., M.I.M.M. The Secretaries are Messrs. Pulbrook and Wright, Manica Chambers, Salisbury, and Mr. Charles Davidson of 53 Standard Bank Chambers, Commissioner Street, Johannesburg, is the local secretary.

The subscription list will be closed on or before the 21st day of October, 1923. The directors reserve the right to close the list as soon as the capital required has been subscribed. There are no founders', vendors' or promoters' shares. All shares are being subscribed for and paid up in cash, and all the subscribed capital of the company will be used for the purpose of boring for petroleum oil near Inyaminga, in the district of Cheringoma, Portuguese East Africa, situated on both sides of the Trans-Zambesian Railway, running from the Port of Beira to Villa Fontes on the south bank of the Zambesi, and at an average distance of 90 miles from Beira.

60,000 ordinary shares are now offered for public subscription, payable 20s. per share on application.

Should less than 35,000 of the shares be applied for by the 21st day of October, 1923, all moneys paid on application will be returned to the respective applicants in full, and free from any deduction whatsoever.

In 1919 the directors above named and a few of their friends in Rhodesia and in Beira, in consequence of information acquired, applied to and eventually obtained from the Companhia de Moçambique, Ltd., the sole and exclusive right to prospect for coal and mineral oil over approximately 42,000 square miles of the territory of that Chartered Company.

An important and significant provision of the concession referred to is that the concessionaires have the sole and exclusive right, for a period of five years from the date of grant, to bore for coal and oil over an extensive tract of country situated between the Zambesi River on the north, the Buzi River on the south, the Rhodesian border on the west, and the Indian Ocean on the east, and, in the event of oil or coal being discovered, to demarcate and take title for themselves and on behalf of an Exploiting Company to be formed under the Mining Laws of the country, over an area of ground amply sufficient to secure sole rights to all underlying oil deposits or reservoirs. The deed of concession, therefore, does not of itself grant title to oil claims, but specifically secures to the concessionaires the exclusive right to take and acquire good, valid and legal title to such claims, under the mining laws of the country, over prospected, pegged and selected ground. The deed in short provides all necessary room for the concessionaires fully to cover, acquire and secure under mining title the full advantage of any success in its boring operations without rush or competition from other ventures.

The Mozambique Company has agreed to commute the royalty payable to it on profits under the ordinary mining titles, in consideration of a 15 per cent. share interest in the total nominal capital of the intended Exploiting Company; that is to say, the Mozambique Company becomes a partner or shareholder with the co-venturers if oil is discovered and the intended Exploiting Company is formed and registered, and so the intended company obtains its title under the laws of the country for a yearly licence of £22 per claim. The area of a claim is 123 acres.

The prospectus contains extracts from the very favourable reports on the oil bearing possibilities of the concession by Messrs. Mennell and Hambly.

The Inyaminga Petroleum, Ltd., has been registered and incorporated in Salisbury, Rhodesia, primarily for the purpose of boring for oil in the district specified in the experts' reports hereinbefore quoted, and the capital of the company will be used for that purpose and no other.

The company has entered into an agreement with the Manica Trust, Ltd., of Beira, under which as consideration for the company undertaking to carry out the boring work recommended by Mr. Mennell and Mr. Hambly, the Manica Trust, Ltd. (Beira), will divide with the Inyaminga Petroleum, Ltd., in equal shares all proceeds, gains and advantages which the former company may hereafter make under them and in terms of the deed of concession hereinbefore referred to should oil be found and the Exploiting Company contemplated in such deed of concession be eventually formed.

The directors estimate that a subscription of £35,000 will be sufficient and adequate to begin, sink and prosecute from 12,000 to 15,000 feet of boring in the Inyaminga district and that such footage will be necessary to support and establish the correctness of the expressed views and prospects as to the probabilities of a commercially payable oil reservoir being discovered. In respect to these views the directors call attention to the Government Bureau of Mines' of the United States records of oil well sinking in America, which show that 75 per cent. of wells sunk on the advice and directions of geological experts of standing have reached petroleum oil and have yielded commercial results.

Letters to the Editor.

To the Editor, *S.A. Mining and Engineering Journal*

Sir,—I regret to say that in my article on Platinum, printed in the issue of September 1st, several mistakes occurred. In my manuscript I stated: "Sands of the Permo-Carbon Era," whereas you printed, "Sands of the Permo-Carboniferous era"; secondly, I wrote: "Serpentinised Peridotite," you printed "Serpentinised Peridotie." Thirdly, my statement as regards 1 dwt. per ton refers not to the platinum reef zone, as interpreted by you, but to the many chrome-iron deposits in the district. I shall be grateful if you will kindly rectify these errors in the next issue of your Journal and oblige, yours, etc.

L. HEYMANN

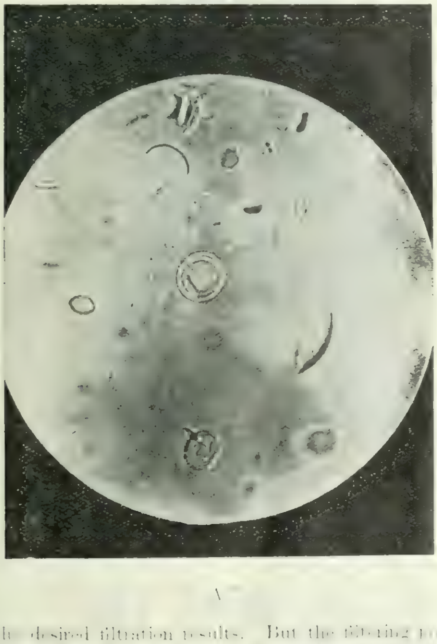
In a Rand Mine Laboratory.

The Kieselguhr Deposits of the Ermelo District.

VALUABLE FOR FILTRATION AND HEAT INSULATION—MANY LESS IMPORTANT APPLICATIONS.

Within recent years a large deposit of fresh water Kieselguhr has been discovered about thirty-five miles east of Ermelo, in the Eastern Transvaal. Kieselguhr, or Diatomaceous Earth, is composed of the siliceous skeletons of Diatoms or animalcula, which have their habitation in fresh water lakes or ponds. There are, roughly, 20,000 different classifications of these Diatoms, each one of which has a different form, but, whatever their classification, they are composed of Silicon Dioxide.

Kieselguhr was once largely used as a carrier for nitroglycerine in the manufacture of dynamite. This has been superseded to-day by sawdust for economical reasons. But for the last 50 years Kieselguhr has been known as one of the finest filtering agents in the world, and its filtering properties entirely depend on the form of the Diatom skeleton of which it is composed. It will be readily understood that, if Silica is all that is required for perfect filtration, then an ordinary white quartz crushed to a suitable fineness would give the desired filtration results. But the filtering properties do not depend entirely upon chemical composition, but also upon the physical form. Truly the chemical composition of the filtering medium must be such that none of the constituents are soluble in the liquid to be filtered, otherwise certain impurities from the liquid would be removed and those of the soluble added. Silica is not soluble in the main liquids requiring filtration, but it is advisable to chemically analyse Kieselguhr, in order not only to ascertain its silica contents, which should be from 90 to 95 per cent., but to make sure that the Kieselguhr does not contain foreign matter, such as Magnesia, etc., which is soluble in water, and would form a deleterious addition to the liquid under filtration.



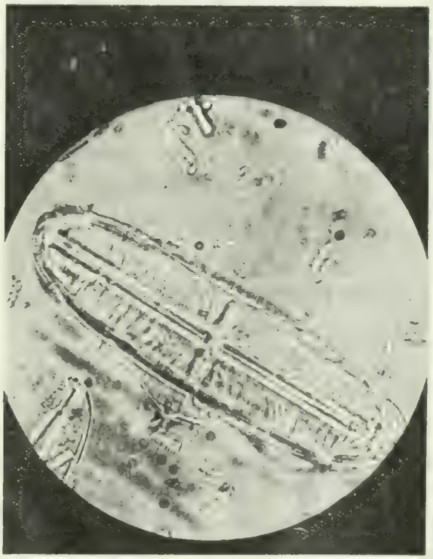
"A."

Physical Form More Valuable than Chemical Composition.

What is far more important than the chemical composition of Kieselguhr is the physical form in which the Silica occurs. Obviously, this must be as cellular as possible—in other words, it must be composed of finely divided spaces or cells through which the liquid to be filtered passes, and it is these cells which not only arrest colloidal matter—and when we speak of colloidal matter we mean such matter as gums, glues, waxes, etc., whether liquid or not—but also solids.

Contained in the 20,000 classifications of Diatoms there are those which are more cellular than others. Of these "Surirella" has a maximum number of cells—in fact, of all the species of Diatoms, this classification probably has the greatest number of cells, whereas that of "Cyclotella" has a far smaller number, as proved by actual filtration results.

The following reproductions show these two classifications, "A" being that of "Cyclotella," and "B" that of "Surirella." Both photographs are magnified to 1,200 diameters, are directly comparable as to size, and clearly prove our contention, viz.: that the Diatom depicted in "B" must prove—and actually does prove in practice—a much better filtering medium than the Diatom depicted in "A," because of the greater number of cells therein. It is of the "B" or "Surirella" classification of which the Kieselguhr of the African Insulations, Ltd., is entirely composed—hence its excellent filtering qualities. It is perhaps difficult to grasp the question of magnitude in microscopic work. The Diatoms shown in the foregoing photograph, it must be remembered, are magnified to 1,200 diameters, and it is perhaps difficult to realise that each one is a particle of almost invisible dust. What we feel will convey clearly the smallness of a Diatom such as those depicted above, is that it has been said by a well-known authority that ten of them would be capable of walking abreast along the edge of the sharpest razor.



"B."

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Electrical Plants in Southern Rhodesia.—III.

By H. W. Geare, A.M.I.E.E.

The Rezende Mines, Ltd.

The power supply of the Rezende Mines, Limited, is obtained from the Odzani River, situated about seven miles from the Penhalonga Valley. At No. 1 Station there are three units, each consisting of a single Pelton wheel direct coupled to a flywheel alternator, each capable of developing 400 H.P., with 800 cub. ft. of water per minute under a working head of 350 ft. A fall of 375 ft. is obtained in about three miles of fluming. The alternators are of the revolving field type and are 250 K.W. each, 440 volts, 3-phase, 250 R.P.M., 50 cycles, with exciters direct coupled. Speed regulation is obtained by means of a Servo oil pressure governor and the voltage is controlled by a Brown Boveri voltage regulator. Further power is obtained by utilising the discharge from No. 1 Station and installing another unit lower down the river. At the No. 2 Station the Pelton unit has two wheels, each with two nozzles and a capacity of 300 B.H.P., under a working head of 155 ft. with 1,350 cub. ft. of water per minute. The alternator is direct coupled to Pelton shaft and has a capacity of 180 K.W. at 440 volts 50 cycles, 200 R.P.M. Prior to the installation of the Odzani plant a limited amount of power, for the Rezende Mines, Limited, was obtained near the Umtali River Falls, situated about two miles from the mine. This plant is the pioneer hydro-electric plant of Rhodesia, and consists of a double 40 in. Pelton wheel with two nozzles, rated at 300 H.P. at a speed of 400 R.P.M. with a head of 320 ft., and a 2 phase, 2,200 volt, 53 cycles, 180 K.W. alternator, direct coupled to the Pelton shaft. This station is still giving excellent service. The current is linked through the Rezende Main Sub Station, and is used to maintain important pumping units in the event of a stoppage to the Odzani plant. The power at Odzani Station is stepped up from 440 volts to 9,000 volts for transmission to the mine, where it is stepped down to 440 volts 3-phase and 2,200 volts 2-phase. The 2-phase system has been retained on certain portions of the plant in order to make use of the original 2-phase plant on the mine. The later additions are 3-phase. Steel tramway poles are used for supporting the transmission line from Odzani, and the conductors are transposed at several points between station and mine. Distribution to the various sections of the mine is carried out from three sub-stations. The cables on the 2,200 volt 2 phase system are carried down the circular shaft and arranged on a ring system with convenient link chambers for isolating faulty sections. The majority of the pump motors are of the squirrel cage type, with starting compensators. The largest pumping unit is fed direct from the 2,200 volt mains, the remainder from transformers at 220 volts. The entire plant is electrically driven and both stations are loaded up to their fullest capacity. There are three compressor units with motors of 250 H.P. each, and the usual hoisting, milling and reduction plant motors. The sub-stations are directly connected to the H.T. lines, and each sub-station is equipped with lightning protection apparatus consisting of horn gaps with non-inductive resistances to earth and water jet arrestors. The Power Stations are protected by horn gaps, water jet and oxide film arrestors. The power factor of the system averages about ·77. A disused alternator of the revolving armature type was recently installed for the purpose of increasing the power factor. This machine is run as an over-excited synchronous motor, and is capable of increasing the power factor to ·9.

Cam and Motor Gold Mining Co., Ltd.

This mine is becoming one of the largest gold producers in the country. Nearly 20,000 tons of ore are treated per month. Crushing is done by seven ball mills and three tube mills. Power Plant: This consists of the following: Two Willans & Robinson turbo-alternators, each of 750 K.W., 550 volts, 3 phase, 50 cycles; one Dick, Kerr [illegible] alternator 250 K.W., driven by Belliss cross-compound engine; one 50 K.W. single phase lighting set at 250 volts. Compressors: One Belliss Morcom 28-drill compressor, one Belliss Morcom 16-drill compressor, one Walker 8-drill compressor. Boiler Plant: Two Babcock & Wilcox 8,000 lb. evaporation per hour with mechanical stokers, one Babcock and Wilcox 8,000 lb. evaporation per hour, wood fuel; one Babcock & Wilcox 7,000 lb. evaporation per hour with mechanical stoker, one Belgian 3,500 lb. evaporation per hour, wood fuel. General: One 250 H.P. Ward Leonard hoist at main shaft with skips of 3 ton capacity.

Wankie Colliery Co., Ltd.

The power plant here consists of five Belliss Morcom engines driving 3-phase alternators of a total capacity of 1,118 K.W., all at 550 volts, 50 cycles. There are eight Babcock & Wilcox boilers, all of 6,500 lb. evaporation. Two of these boilers are gas fired, the flue gases from the coking plant being used for this purpose.

Globe and Phœnix G.M. Co., Ltd.

This is one of the oldest working mines in Rhodesia, with ore of a phenomenally rich grade. The power plant is as follows: One Belliss Morcom engine, coupled to Siemens 600 K.W., 580 volt, 3 phase, 60 cycle alternator; one Belliss Morcom engine, coupled to Siemens 500 K.W. alternator; two 20 drill compressors; one 160 H.P. mill engine; one 100 H.P. hauling engine. Boiler Plant: Three Babcock and Wilcox boilers of 5,000 lb. evaporation, six Fraser and Chalmers of 4,000 lb. evaporation.

Salisbury Municipality.

The first Diesel engines direct coupled to D.C. generators, and the supplementary steam turbo set, are to be superseded by a new plant. The engines for the new plant are of Messrs. Browett, Lindley & Company's make, and are of 500 H.P. each. These are coupled direct to E.C.C. 350 K.W. 2,000 volt 3 phase alternators with exciters also direct coupled. Each engine is supplied with gas from two 300 H.P. Dowson & Mason double-draught gas producers, fitted with the usual scrubbers, vaporisers, etc. Two complete installations as above are being supplied. Extensive tests were carried out in England with these engines and plant, working with Wankie coal sent oversea for the purpose, with excellent results. Wankie coal proved most suitable for the double-draught producers and gave very little trouble. No tar whatever was found to come through and after two months' working the scrubbers were quite clean. No tar extractors are fitted, the volatiles being consumed in the producer itself. A coal consumption about 12 per cent. better than the guarantee was obtained.

(To be continued.)

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

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The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

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The Week in the Sharemarket.

BRAKPANS AND SPRINGS THE FEATURES—DIAMONDS MOMENTARILY DULL—PRICE OF TIN RISING.

The slight improvement of last week has developed into a more active market. Most of the leading stocks have advanced. The feature of the week has been the strength of the Anglo-American stocks, notably Brakpans, Springs and West Springs, which have all risen appreciably. Brakpans and Springs have still considerable potential improvement in them, and Wests, while more speculative at this stage, are favoured for a long shot. Anglo-Americans themselves responded to the advance of the subsidiaries, and although their dividend prospects are still vague are considerably fancied by the speculator. Barnato stocks have as a whole been dull. State Mines may, however, be considered an exception, and the stock has advanced. More interest was evident in Randfonteins, and although several heavy lots were liquidated the stock withstood the selling. Van Ryn Deeps have been a weakish feature and the stock has been offered. Corner House stocks have been fairly active and New Modders again advanced a fraction. Crown Mines, after the good profit declared for August, are being bought and it is probable that this stock will improve considerably. More interest was taken in Nourse Mines, London being a buyer. General Mining stocks have been firm. Goldfields stocks featured Robinson Deep "B" shares, which have been heavily bought for investment. The "A" shares remain steady having lost their speculative feature. Simmer and Jacks, after declaring a surprisingly good profit for August, have improved their turn on slight inquiry. Union Corporation stocks were notable for the advance in Gedulds. This stock is scarce and very little demand would cause a considerable advance in the price. Modder Deeps have been a firm market. Diamond shares are for the moment dull and very little business took place in them during the week. An improvement will no doubt set in shortly if the Christmas trade in the stones is satisfactory. Crown Diamonds are said to be running their complete plant, but no results have been disclosed so far. The price of tin is rising and tin shares should benefit. Zaaiplaats have improved, but other tin shares remain dull. Investment stocks have not had much business, most attention being given to the revival in gold shares. A few parcels of Loans changed hands, and National Banks and Reserve Banks were dealt in in small numbers. Generally speaking, the feature of the market has been the buying from London. Stock there is as scarce as here, and, although in comparison with former active times the turnover is so far insignificant, the advance of prices has been exceedingly rapid in some cases. The market tends to expand and, with conditions so favourable to the industry as they are at present, much more activity may be looked for.

	Fri. 31st.	Sat 1st	Mon 3rd.	Tues. 4th	Wed 5th.	Thurs 6th
Anglo-Am. Corp.	23 9*	24 3	23 9	24 3	24 0*	25 [illegible]
Apex Mines	5 9*	—	5 9*	—	5 [illegible]*	
Aurora Wests	5 6	6 3	6 3		6 0	[illegible]
Brakpan Mines	65 9	65 6*	65 6*	66 6	67 3	67 9
Brick and Potteries	4 0*	4 0*	4 1*	4 0*	4 [illegible]*	4 [illegible]*
Bushveld Tins	0 3*	—		0 4*	0 4*	0 4*
City Deeps	54 0*	54 6*	54 0	54 3*	55 0	57 [illegible]
Clydesdale Colls.	17 3*	—	17 3+	17 3+	17 3+	17 [illegible]
Con. Diamonds	19 6	19 0*	19 3	19 0*	19 1[illegible]	19 [illegible]
Con. Main Reefs	10 3	10 3	10 3*	10 3	10 0*	10 [illegible]
Coronation Colls	28 0+	25 0+	—	—	—	—
Do. Freeholds		0 6*	0 6*	0 6*	[illegible]	[illegible]
Do. Syndicates	6 0	6 0*	5 9*	5 9*	[illegible]	[illegible]
Crown Diamonds	6 6*	6 7	6 6*	6 6	[illegible]	[illegible]
Crown Mines	50 0	50 6*	49 6*	51 0	51 [illegible]	52 [illegible]
Daggafontein Mines	2 0*	2 [illegible]*	2 0*	2 0*	2 0	2 [illegible]
Durban Rood. Dps.	15 3*	15 6*	15 0*	15 3*	15 [illegible]*	15 [illegible]
East Rand Coals	1 0*	1 0*	1 0*	1 0*	1 0*	1 [illegible]
East Rand Deeps	0 7*	0 7*	0 7*	0 7*	0 7*	0 7*
East Rand Props	5 0	4 6*	4 [illegible]*	4 6*	4 7*	4 [illegible]
Eastern Golds	0 4*	0 4*	0 4*	0 4*	0 4*	0 4*
Ferreira Deeps	5 9*	5 9*	5 8*	—	5 9+	[illegible]
Frank Smith Dmds	2 11*	2 11*		3 0+	3 0+	3 6
Geduld Props	59 6*	60 0	59 6*	59 6*	59 [illegible]	60 [illegible]

	Fri. 31st	Sat 1st	Mon 3rd	Tues 4th	Wed 5th	Thurs 6th
Geldenhuis Deep	4 0		4 0	—	4 0*	4 0*
Glynn's Lydenburg	12 0*	12 0*	12 0+	—	12 6*	12 [illegible]
Govt. Areas	115 0*	116 0*	115 0*	115 0	114 0	116 0*
[illegible] Props	8 3+	8 3+	—	8 9	8 0+	8 [illegible]
Lace Props	8 0	8 0	8 0	8 0*	8 6*	8 6*
Langlaagte Est.	23 6	23 1	23 9	23 6*	24 9*	24 [illegible]
Leeuwpoort Tin	4 [illegible]	4 [illegible]	4 [illegible]	4 1*	4 1*	4 [illegible]
Lydenburg Plats.	[illegible] 6*	—	2 7	2 [illegible]*	—	—
Middelvlei Est.	[illegible] 6*	1 6*		1 6*		1 6*
Modder B	24 6	24 6	23 6*	24 9	24 4	24 6*
Modder Deep	40 0*	40 9	39 9	40 0	39 6*	40 3
Modder Easts	4 9+	4 9+	[illegible]	[illegible]	[illegible] 6*	4 [illegible]
Natal Navig. Colls.	27 3*	27 6*		27 6*	27 6	27 9*
National Banks	120 0+	120 0+	120 0+	118 0*	118 6*	120 0
New Eland Dmds	[illegible] 0*	—	[illegible] 9	[illegible] 3*	[illegible] 0+	37 0
New Era Cons.	7 3*	7 5		7 1*	7 1*	
New Geduld Deeps	0 6*	0 6*	0 [illegible]	0 6*	0 6*	0 [illegible]
New Kleinfontein	5 0*	5 3*	5 3	5 3	5 6*	5 [illegible]
New Modder	52 0	52 0	51 6*		52 6	52 3
New State Areas	[illegible] 6	[illegible] 9	[illegible]	[illegible]	[illegible]	[illegible]
Nigels	6 3*	6 0*		—	7 0+	
Nourse Mines	14 9	14 9*	14 [illegible]	14 [illegible]	14 9	14 9
Pretoria Cements	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Rand Nucleus	1 2+	1 6*	1 0	1 1*	1 2	1 1*
Rand Collieries	—	—	—	0 6*	0 6*	
Rand Mines	92 6*	92 6*	92 [illegible]		92 6*	92 6*
Randfontein Cent.	12 6*		—	12 6*	12 6*	12 9*
Do. Estates	20 9	20 7	20 1	20 9	21 0	21 3
[illegible] Dmds		0 6*	0 [illegible]	0 6*		
Robinson Ventures	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Robinson Deep "A"	33 [illegible]	33 0*	[illegible]	[illegible]	[illegible] 0*	33 [illegible]
Robinson Deep "B"	15 7	15 6	15 6*	15 9	15 9	16 0
Rooibergs	3 0+	3 0		3 6*		3 0
Rose Nigels	1 0+	1 0+	1 0+	1 0+	1 0+	—
Sheba	2 0+	2 0+	2 0+	2 0+	—	—
Simmer and Jacks	2 6*	2 6	2 6*	2 6*	2 7*	2 7*
S.A. Breweries	31 6	—	30 6*	32 0	31 0*	—
S.A. Lands	3 4	3 4	3 4	3 4*	3 4	3 6
S.A. Reserve Bank	£134*	£135	£133	£135+	£136*	£136
Springs Mines	18 7	19 0	18 [illegible]*	18 9*	19 6	19 3
Sub Nigel	11 0	10 9*	10 9*	11 0	12 0	12 0
S.A. [illegible]	9 0	9 6	9 0*	9 3*	9 3*	9 4*
S.A. Townships	10 6*	10 [illegible]	10 9	10 7	11 3*	11 3*
Transvaal Lands	17 3*	17 6*	17 6*	17 [illegible]*	17 9*	18 0
Transvaal G.M. Est.	10 6*	10 [illegible]	11 0+	10 3	10 9*	10 9*
Transvaal S[illegible]	14 0+	13 6	11 0+	12 6	13 3*	13 [illegible]*
Union 5 per cent.	£101*	£101	£101	£101*	£101*	£101
Van Dyk	0 9*	0 11	0 9*	0 9*	0 9*	1 0+
Van Ryn Deeps	64 0	65 0	65 3+	65 0*	65 0	64 9
Van Ryn Estate	13 9*	13 9*	13 9*		14 6	
Village Deeps	11 9*	11 9*		11 9*	12 3	12 0
West Springs	20 6	23 1	20 9	21 1	22 1	22 0
West Rand Cons.	1 9*	[illegible]	[illegible]			[illegible]
Western Rand Est.	2 0*	2 1	2 [illegible]	2 1*	2 1*	2 1*
Witbank Colls.		30 6*	30 6	30 0*	30 3*	30 6
Witwatersrands	14 [illegible]	14 3*	14 1*	14 0*	14 0*	14 [illegible]
Wit. Deeps	17 9+	17 [illegible]	17 [illegible]	17 [illegible]		14 1*
Zaaiplaats Tin	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 4*

* Buyers + Sellers

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock, and a copy of the letter retained by the person making the enquiry.

Mr. Hatt writes to the effect that a Transvaal Prospectors' Association has been duly incorporated with offices at [illegible] Natal Bank Buildings, Market Street, Johannesburg. The association [illegible] 138 and several leading officials among their numbers. Genuine prospectors wishing to join the T.P.A. are cordially invited to do so. The entrance fee is 5s. [illegible] and 2s. 6d. per month qualifies for membership. All further particulars may be had from the Secretary at the above address.

Progress on Barnato Mines.

POINTS FROM THE LATEST QUARTERLY REPORTS—DEVELOPMENT AT GOVERNMENT AREAS AND NEW STATES.

The returns for the three months ended June 30 last of the mines of the "J.C.I." group show the following features:—

Government Gold Mining Areas.

Crushed, 442,500 tons, total working revenue, £828,114, equal to 37s. 5d. per ton, total working costs, £390,444, equal to 17s. 8d. per ton; total, £437,670, equal to 19s. 9d. per ton, sundry revenue, £2,247, total profit for quarter, £439,917. No allowance has been made in the above for Government's share of profits. The expenditure on capital account amounted to £15,607. There was an increase of 13,500 tons in the tonnage crushed as compared with the previous quarter. The working costs were 7d. per ton lower, and the revenue was 4d. per ton higher, with the result that the working profit for the quarter shows an increase of £32,481 as compared with the preceding three months. The development footage sampled totalled 5,310 feet, and gave the following results: Payable, 3,440 feet, having an average value of 9·6 dwts. over 59 inches of reef; unpayable, 1,870 feet, having an average value of 3 dwts. over 19 inches.

The Langlaagte Estate.

Crushed, 298,000 tons; total working revenue, £387,012, equal to 26s. per ton; total working costs, £297,419, equal to 20s. per ton; total, £89,593, equal to 6s. per ton; profit on treatment of accumulated slimes, £1,757; sundry revenue, £1,791; total profit for quarter, £93,141. No allowance has been made in the above for Colonial taxation. The expenditure on capital account amounted to £14,146. The Consolidated Langlaagte Mines, Ltd., was amalgamated with this company as from May 28, and the above figures include the results of that company for the quarter. The development footage samples totalled 5,395 feet, and gave the following results: Payable, 3,305 feet, having an average value of 28 dwts. over 20 inches of reef; unpayable, 2,090 feet, having an average value of 8·9 dwts. over 15 inches.

New Primrose.

Crushed, 62,400 tons; total working revenue, £59,769, equal to 19s. 2d. per ton; total working costs, £55,331, equal to 17s. 9d. per ton; total, £4,438, equal to 1s. 5d. per ton; sundry revenue, £457; total profit for quarter, £4,895. No allowance has been made in the above for Colonial taxation. During the quarter the quantity of ore crushed was 500 tons less than during the previous three months. The working costs show a decrease of 1d. per ton, but there was a decrease of 10d. per ton in revenue, with the result that the working profit was £2,394 less than for the preceding quarter.

New Unified Main Reef.

Crushed, 34,700 tons; total working revenue, £31,226, equal to 18s. per ton; total working costs, £29,342, equal to 16s. 11d. per ton; total, £1,884, equal to 1s. 1d. per ton; sundry revenue, £165; total profit for quarter, £2,049. No allowance has been made in the above for Colonial taxation. As compared with the previous quarter the quantity of ore crushed shows a decrease of 1,900 tons, and the working profit a decrease of £339. Owing to the exhausting of ore, mining and milling operations ceased on the morning of June 29, and the Inspector of Mines was notified that the mine had closed down at that date.

Randfontein Central.

Crushed, 570,000 tons; total working revenue, £676,542, equal to 23s. 9d. per ton; total working costs, £564,552, equal to 19s. 10d. per ton; total, £111,990, equal to 3s. 11d. per ton; sundry revenue, £3,839; total profit for quarter, £115,829. No allowance has been made in the above for Colonial taxation. The expenditure on capital account amounted to £19,628 and debenture interest to £28,878. As compared with the previous quarter, there was an increase of 14,000 tons in the quantity of ore crushed. The revenue shows a decrease of 1s. per ton, but this was counterbalanced by the increased tonnage, and a decrease in the working costs of 10d. per ton, with the result that the working profit was £3,874 more than for the previous quarter. The development footage sampled totalled 8,065 feet, and gave the following results: Payable, 4,375 feet, having an average value of 16·7 dwts. over 20 inches of reef; unpayable, 3,690 feet, having an average value of 10 dwts. over 14 inches.

Van Ryn Deep.

Crushed, 180,800 tons; total working revenue, £360,386, equal to 39s. 10d. per ton; total working costs, £183,399, equal to 20s. 3d. per ton; total, £176,987, equal to 19s. 7d. per ton; sundry revenue, £2,995; total profit for quarter, £179,982. No allowance has been made in the above for Colonial taxation. The expenditure on capital account amounted to £7,391. Compared with the previous quarter there was an increase of 7,700 tons in the quantity of ore crushed, a decrease of 1s. per ton in the working costs, and a decrease of 9d. per ton in the revenue, and the working profit for the quarter amounting to £176,987, shows an increase of £9,802. The development footage sampled totalled 1,805 feet, and gave the following results: Payable, 1,395 feet, having an average value of 12·9 dwts. over 42 inches of reef; unpayable, 410 feet, having an average value of 6·3 dwts. over 19 inches.

Witwatersrand Gold Mining Co.

Crushed, 137,250 tons; total working revenue, £153,530, equal to 22s. 4d. per ton; total working costs, £125,355, equal to 18s. 3d. per ton; total, £28,175, equal to 4s. 1d. per ton; sundry revenue, £3,530; total profit for quarter, £31,705. No allowance has been made in the above for Colonial taxation. The expenditure on capital account amounted to £37. The quantity of ore crushed during the quarter shows a decrease of 5,100 tons. There was an increase of 7d. per ton in the working costs, but the revenue was 1s. 2d. per ton higher, with the result that the working profit at £28,175 was £3,087 more than for the previous quarter. The development footage sampled totalled 1,190 feet, and gave the following results: Payable, 760 feet, having an average value of 15·8 dwts. over 31 inches of reef; unpayable, 430 feet, having an average value of 4·1 dwts. over 35 inches.

New State Areas, Ltd.

Crushing commenced on May 1, and during the months of May and June 32,000 tons of low grade rock were treated and 1,768 fine ounces of gold recovered. Most of the gold was hung up in the tube mills. The plant is now getting into order and the position is steadily improving. The expenditure on capital account amounted to £145,833. Development.—A total of 10,875 feet were accomplished, 4,242 feet being on reef. South Shaft.—2,700 feet were sampled, of which 1,360 feet were payable, having an average value of 18·7 dwts. over 25 inches of reef. Unpayable, 1,340 feet, having an average value of 8·2 dwts. over 13 inches. North Shaft.—1,530 feet were sampled, of which 250 feet were payable, having an average value of 25·4 dwts. over 36 inches of reef. Unpayable, 1,280 feet, having an average value of 11·6 dwts. over 6 inches.

The declared profits have been arrived at by adding together the published monthly figures, the value of the gold produced having been calculated at the following prices: April, £4 7s. 6d.; May, £4 8s. 6d.; and June, £4 9s. per fine ounce.

INDUSTRIES SECTION.

The Concrete Age.

LOCAL INDUSTRIES No. 2: THE HUME PIPE AND PRODUCTS—INTERESTING NEW PROCESS THAT HAS CHEAPENED PIPE CONSTRUCTION—MANY USES FOR CONCRETE—GOVERNMENT, MUNICIPAL, MINING, FARM, FACTORY AND DOMESTIC APPLICATIONS.

Is the iron and steel age giving place to the concrete age? One is tempted to ask the question when confronted with the multitarious uses to which this most adaptable material can be applied. The increasing use of concrete in a variety of applications undreamed of a dozen years ago is one of the most remarkable of post-war industrial developments. The exigencies of war revealed innumerable ways in which this wonderfully serviceable, yet essentially simple, composition could be utilised, and since then its appropriateness for more pacific purposes has been at least equally demonstrated.

Concrete as a building material is by no means a modern discovery. Many spiendid examples of its use by the Romans still exist. But we are at present more particularly concerned with its modern uses. It has, of course, the immense advantage over natural stone that it can be easily moulded, while wet, to any desired shape or size. Moreover, its constituents can be obtained in almost any part of the world, and its manufacture is extremely simple. On account of these properties, builders long ago came to give it a distinct preference over stone, brick, timber and other building materials. Besides being used for massive constructions like breakwaters, dock walls, culverts, foundations of buildings, lighthouses and bridges, it proved its usefulness to the architect and engineer in many other ways.

Ferro Concrete Possibiliaies.

A remarkable extension of the use of concrete was made possible by the introduction of scientific methods of combining it with steel or iron. The floors and even the walls of important buildings have for many years past been made of this combination, and long-span bridges, tall factory chimneys and large water tanks are among the many uses —which lost their novelty years ago—to which it has been put. Piles made of steel concrete can be driven into the ground with blows that would shatter the best of timber.

It is, however, only in comparatively recent years that another almost illimitable sphere of utility has been revealed as the result of a succession of circumstances which brought into being a concrete pipe offering many advantages over the iron and steel pipe, which had for long held the immense field unchallenged. One day it occurred to some inquiring individual to ask why iron and steel should be considered the only possible materials for pipes to hold water under pressure, to carry sewerage or drainage, and to meet the thousand and one other uses to which pipes of all sizes and types are put. Why not concrete, strengthened in some way so that it would serve the purpose? Thus one day the world woke up to find that the concrete pipe, fortified by steel reinforcement had come, and come to stay.

Harnessing Nature.

Of course perfection was not attained at once. After many methods had been tried a distinct and definite improvement was at last discovered whereby solidity, strength and durability were secured by the application to the process of manufacture of a simple, but very potent force of nature. What this process is and how effective is its application is demonstrated at the Hume Pipe Company's works, which are one of the most interesting as well as one of the best equipped factories to be found on the Germiston industrial sites.

In the making of the "Hume" reinforced concrete pipe strength is given to the concrete not only by the scientifically designed steel-wire reinforcement, but by the harnessing of centrifugal force. Effective packing has always been a great difficulty in getting the best possible results from concrete. It can be rammed or shaken down to make it settle, and while both methods have given good results, it has been found that centrifugal force is still better. As the makers of Hume pipes put it, "You can't beat Nature, and the Hume concrete pipe is made in Nature's way." We cannot do better than quote the makers' description of the process.

"In the first place the reinforcement of the pipe has to be made. This reinforcement, which is of strong steel wire, is woven by means of patented machines, the design of the reinforcement, as well as the gauge of the wire, being altered according to the process which the pipe will be required to stand. This reinforcement is then placed inside a hollow cylinder, which in turn is placed upon a revolving machine, and the concrete is fed in while the cylinder revolves slowly. After the necessary quantity of concrete has been fed in, the speed of the machine is increased, and then comes into play that Force of Nature

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which has been referred to. The centrifugal force created expels practically all the water and air in the concrete in which the reinforcement had now become permanently and [illegible] embedded and makes the concrete much denser than would [illegible] in [illegible]. After this process the pipe undergoes a steaming process and is dried [illegible] and the result is a completed concrete pipe [illegible] of this description in any other reinforced concrete pipe made [illegible] exception."

Long Life and Efficiency.

Strength of a pipe and the tightness with which its joints can be made are, of course, very valuable properties, but in other respects the concrete pipe is claimed to offer considerable advantages over the metal pipe. Not the least of the demerits of the latter is its liability to encrustation or "furring up," which, of course, considerably reduces its carrying capacity. The concrete pipe is very much less subject to this process. Another great enemy of the cast iron and steel pipe is corrosion, and here again the concrete pipe enjoys comparative immunity.

Another point that counts in favour of the reinforced concrete pipe is its cost. In a cast iron or steel line the whole line is usually capable of standing the same strain right throughout, even although at some points it may not have to stand more than, say, 20 lb. to the square inch, while at other points the pressure may be 300 lb. In such a case concrete pipes could vary section by section with a consequent appreciable saving in cost.

Not the least of the surprises that an inquiry into the ramifications of this industry reveals is the extent and variety of its productions. The Hume Pipe Company point with pardontable pride to a sewerage line over 27,000 feet long constructed of reinforced concrete pipes, some of 24 inches diameter, supplied to the Wynberg Municipality. The Company has supplied several other municipal pipelines, but this particular one is carried along the surface instead of being buried underground, as is the more usual practice. Of another kind of Hume concrete pipe the Government has already in use about half a million feet as [illegible] conduits. A conspicuous object in the Pearl District is a chimney stack 88 feet high entirely built up of Hume reinforced concrete pipes, and similar stacks are to be seen at the Company's Germiston factory.

Manifold Uses.

For farm use and on irrigation schemes the reinforced concrete pipe finds many uses; on the mines it is installed for ventilation, water supply, sand filling and conveyance of [illegible]; in sugar refineries it has proved its serviceability for by-products containing powerful corrosive acids, and, generally, since the commencement of manufacture [illegible] five years ago, the Hume reinforced concrete pipe actually in commission measures up to hundreds of miles and is all over South Africa. This, therefore, can claim to be another of the industries of the country that has unquestionably "made good."

Concrete has, however, many more uses than in the manufacture of pipes on the ingenious system that has been described in the foregoing. We have now reinforced concrete telegraph, lighting and electric power poles, fencing posts, road, garden, lawn and tennis court rollers, tanks and troughs of all sizes and for all purposes from [illegible] to sheep dipping, and for domestic use. Silos and [illegible] are built of patent concrete [illegible], the [illegible] being made with an [illegible] to [illegible] internal temperature, paving slabs, kerbing and [illegible] of artistic design and finish, [illegible], [illegible] pedestals, rock faced concrete blocks for [illegible] construction, fire places of extremely pleasing appearance are among other typical products of the Germiston factory, a visit to which cannot fail to impress one with admiration for the ingenuity and resourcefulness which have been responsible for the building up of this valuable industry.

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WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

SELECTED NEW PATENTS.

N. V. "Erla" Maatschappij voor Wetenschappelijk Aard [illegible]onderzoek.—Method and apparatus for the determination of the direction of electro-magnetic waves.

The Merrill Company.—Improvements in process of recovering [illegible].

Int. Gen. Elec. Co. Inc.—Improvements in and relating to automatic sub-station control equipment.

Int. Gen. Elec. Co. Inc.—Improvements in and relating to automatic switching equipment.

Johannes J. L[illegible].—Improvements in and relating to furnace linings, crucibles, and the like.

Henry S. Potter.—Improvements in and relating to hollow steel rods and bars.

John Bell.—Improvements in cleaning shot holes.

Arthur Servais.—Improvements in or relating to welding chain-links, rings, or the like.

Ventimotors Ltd.—Improvements in or relating to wind motors.

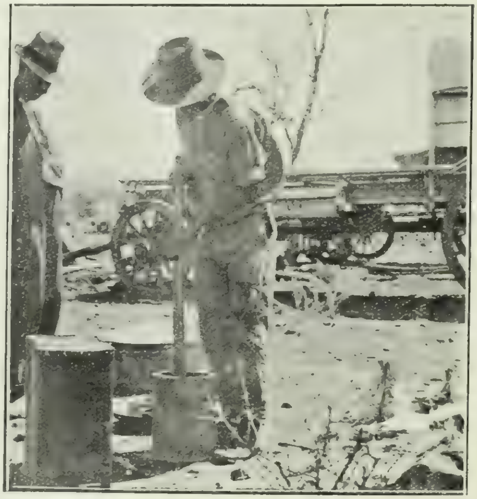
Siemens Bros. and Co., Ltd.—Improvements relating to automatic and semi-automatic telephone systems.

Alexander A. Holle.—Improvements in and relating to motor road vehicles.

Platen-Munters Refrigerating System.—Improvements in absorption refrigerating apparatus.

Alfred Williams, Maurice van Praagh, and Alfred Charles Montagu Sedgwick.—An electrically heated tubular fuel vaporiser, for internal combustion engines.

Thomas Lundye.—Mechanism for shifting belts from fast to loose pulleys and *vice versa*.



Panning Samples from the New Batavia Gold Field.

Rhodesia's Mineral Output for July and to Date.

The report of the Executive Committee of the Rhodesia Chamber of Mines and output of gold and other metals and minerals for the month of July, 1923, is as follows:—

Finance.

The credit balance on 1st July was £104 1s. 4d. Receipts during the month amounted to £644 8s. 10d., and expenditure to £548 14s. 8d., leaving a credit balance on 31st July of £199 15s. 6d.

Native Labour.

The following is a summary of native labourers employed in Southern Rhodesian mines during the months of May and June, 1923:—

	May.	June.
Local	10,426	10,852
Portuguese Territory	3,944	3,932
Northern Rhodesia	7,892	8,349
Nyasaland	12,629	12,563
Other sources	446	441
	35,337	36,137

The number employed in June shows an increase of 111 as compared with the corresponding month in 1922.

Distribution of Gold Premiums.

The Chamber has been advised that the lowest price realised for gold by Messrs. Rothschild & Sons during the quarter ended 30th June, 1923, was £4 8s. 3d. per fine ounce, rising gradually to £4 9s. 5d. towards the end of June.

Representation.

Mr. D. V. Burnett has been appointed the representative of Rhodesia Exploration Company, Ltd., vice Mr. G. A. Denny, resigned.

Output of Gold and Other Minerals.

The total value of gold and other minerals from Southern Rhodesia for the month of July, 1923, was £356,753 compared with £360,706 for the previous month of June.

ASBESTOS—JULY, 1923.

Bulawayo District.

	Tons	£	s.	d.
Nil Desperandum (Afr. Asb. Min. Co., Ltd.)	455.52	9,110	8	0
Pangani (J. Hancock)	30.00	360	0	0
Shabanie (Rhod. & Gen. Asb. Corp., Ltd.)	869.95	21,748	15	0

Victoria District.

	Tons	£	s.	d.
Balmain (Afr. Asb. Min. Co., Ltd.)	60.00	1,200	0	0
Gath's (R. & Genl. Asb. Corp., Ltd.)	351.90	8,797	10	0
King (Rhod. King Asb. Co., Ltd.)	162.33	3,246	10	0
Totals	1929.70	£44,463	3	0

SUMMARY OF MINERAL PRODUCTION—JULY.

		Value £
Gold	fine oz. 54,382.88	*244,848
Silver	fine oz. 12,099.95	1,972
Coal (raised, 59,401 tons)	Sales	19,015
Do. (used for coke and bricks)		5,094
Copper (Blister)	tons 239.71	19,481
Chrome Ore	tons 7,277.52	18,723
Asbestos	tons 1,929.70	44,463
Arsenic	tons 84.79	2,293
Mica	lbs. 1,743	218
Diamonds, June and July	carats 94	616
* Includes £13,294 gold premiums	Total	£356,753

COMPARATIVE TABLES, 1922 AND 1923.

	GOLD		SILVER.		COPPER.		CHROME ORE		COAL.*		ASBESTOS.	
	1922. Fine Ozs.	1923. Fine Ozs.	1922. Fine Ozs.	1923. Fine Ozs.	1922. Tons.	1923 Tons.	1922. Tons.	1923. Tons.	1922 Tons.	1923 Tons.	1922. Tons.	1923 Tons.
January	53,540·85	56,630·20	13,696·43	14,731·31	286·11	277·57	1,463·63	14,749·70	49,830	40,017	557·67	1,708·24
February	51,421·60	49,423·71	14,403·62	12,410·90	283·98	278·56	nil	11,257·46	36,521	39,563	380·26	1,218·46
March	54,643·22	48,171·11	14,376·10	11,624·75	273·08	239·31	nil	5,943·86	39,741	44,040	436·58	885·98
April	54,318·24	53,200·29	14,846·86	12,488·99	294·86	251·30	2,815·43	6,953·49	37,469	44,494	939·73	1,693·50
May	53,920·41	54,737·05	15,716·85	12,248·12	288·96	249·29	5,503·38	9,387·30	37,821	52,662	828·07	1,642·11
June	55,614·07	58,322·67	14,745·36	12,544·40	290·98	226·70	300·00	12,079·40	39,613	55,503	1,068·59	1,617·24
July	54,190·51	54,382·88	12,967·44	12,099·95	263·15	239·71	16,802·69	7,277·52	49,973	59,401	1,412·55	1,929·70
August	56,037·01		14,196·12		277·83		8,973·23		49,465		1,711·73	
September	55,443·21		14,392·82		288·10		20,494·68		46,070		1,558·14	
October	54,670·30		14,433·42		286·84		nil		47,089		1,667·55	
November	53,255·36		13,399·84		270·11		24,814·34		43,687		1,799·39	
December	55,736·59		15,034·23		284·21		12,307·15		38,371		1,858·25	
Totals for 1922 and 1923	652,791·37		172,209·09		3,388·21		93,474·53		515,650		14,218·51	

* The Coal Production is from the Wankie Colliery.

Grand Totals Gold and Other Metals and Minerals, and Precious Stones, Output to Date.

Gold	13,328,073 Ozs.	£56,299,498	Arsenic	2,194·74 ..	74,004
Silver	3,384,173 ,,	447,982	Ironstone	29,604·42 ,,	4,198
Lead	7,072·17 Tons	94,788	Tin	17·45 ..	2,849
Copper	29,920·08 ..	2,409,247	Barytes	63·66 ..	158
Chrome Ore	888,420·03 ..	2,781,601	Mica	296 tons 817 lb.	76,768
Tungsten Ores	278·40	28,546	Diamonds	14,135·75 carats	66,315
Coal (raised)	6,415,328 ..	2,458,697	Other Precious Stones	72,977 ..	8,065
Antimony Ore	79·11 ..	1,550			
Asbestos	101,293·01 ..	3,078,470	Grand Total of Mineral Production to date		£67,832,736

NORTHERN RHODESIA.

Mineral Production for July, 1923, and Total Output and Value from commencement to July 31st, 1923.

	July, 1923.		Total to July 31, 1923	
Gold	159·99 ozs.	£642 10 6	Ozs. 15,790·99	£69,110 1 4
Silver	21·32 ozs.	2 2 7	61,857·19	8,499 4 10
Lead	719·04 tons	10,785 12 0	Tons 98,166·04	2,054,748 1 1
Copper Finished	nil	nil	7,377·00	389,647 5 5
Copper Concentrates	nil	nil	5,232·06	220,959 2 8
Bismuth	nil	nil	6·24	3,491 9 5
Mica	nil	nil	1·18	412 0 0
Zinc Ore	nil	nil	13,211·84	85,955 3 8
Vanadium	nil	nil	39·95	9,096 16 2
		£11,430 5 1		£2,841,919 4 7

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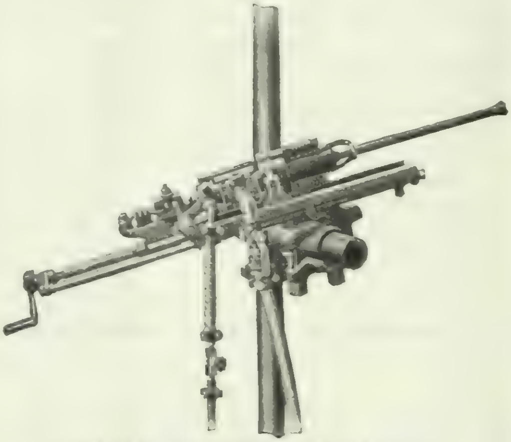

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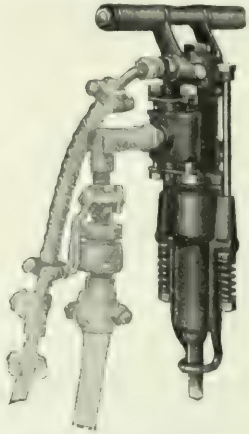

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Numerous field tests have demonstrated that the new Rotators are the fastest and most powerful one-man rock drills in use.

One element in Rotator speed is the *Sullivan spool valve*, the pioneer drill valve of this type. *Patented 25 years ago*, it has been embodied with modifications in one Sullivan rock drill after another, always providing high speed in drilling. The positive, snappy piston blow which this valve transmits is most effective, whether the rock be hard or soft, broken or solid.

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TRADE SECTION.

Week in the Mining Material and Engineering Trades.

BUSINESS DULL BUT HOPEFUL—IRON AND STEEL CONDITIONS HERE AND OVERSEAS—PETROL REDUCTIONS—TIMBER AND BUILDING MATERIALS.

General.

In conversation with a leading member of the commercial community this week, he stated that it must be admitted that conditions generally are still very quiet, but that at the same time it must also be admitted that there are indications apparent—a slight undercurrent—that we are at last turning the corner of the long prevailing depression in business. It is quite possible, he said, that we may not feel the effect of it for some considerable time, but that bed-rock had now been reached and that we should during the next few months see better business conditions he was assured. This in spite of the not too hopeful outlook overseas at the moment. Engineering shops are still fairly quiet, but looking forward to more business in the near future. Tenders are still being called for for fairly good work, and as soon as these come in quite a number of the engineering shops will be fairly busy.

The building trade is going along steadily but without much activity at the moment. The timber trade is fairly good, with good stocks of timber in every department and with accretions coming in weekly. Prices in consequence are in favour of builders now erecting buildings and the tendency of prices advancing just now, when there is every prospect of good stocks coming forward, is poor.

Prices of mining material are much about the same as they have been for some weeks past.

A few inquiries have filtered through from Rhodesia to Johannesburg merchants. A fair amount of work is going on in Rhodesia just now, where much new development seems to be in progress. This all helps, in however small a way, the Johannesburg mining material merchant. At any rate mining material lines seem, from the prospecting point of view, rather active up there at the moment.

As far as the Union of South Africa is concerned, reports from the various centres continue very good. There is every indication that this country is going to have a busy and prosperous future from a commercial point of view as soon as a settlement has been arrived at in Europe. If we only get a fair chance South Africa is going to make good and compensate us all for past disappointments in the coming months. In the whirl of present world events it is satisfactory to note that the share market, an infallible barometer, is firm, which gives us heart of grace.

Iron and Steel.

The beginning of the month shows a slightly better tendency in the shape of inquiries for material. Tenders are being called for various lines, and the immediate outlook is regarded by merchants not unhopefully.

Prices remain without quotable change.

Britain: Mail Advices.

Iron and Steel: the Outlook.—The greater activity noticeable last week in the iron and steel markets has been scarcely maintained. Probably this is due to the firming up in prices which usually follows when buyers show an interest in the market. Home prices have been shaded, but the more drastic cuts have been made in export quotations. An encouraging feature is that overseas buyers are taking greater interest in British material than for some time past, owing to the drastic conditions of sale imposed by Continental manufacturers. The Continental situation is difficult to understand; but the manufacturers claim that they have booked orders sufficient to keep them comfortably employed until the end of October, and this is borne out to a certain extent by the longer period required for delivery and the higher prices asked. It is significant that Lorraine works have this week been inquiring again for supplies of British coke, which would indicate that the fuel situation on the Continent is again becoming precarious.

Pig Iron.—Discouraging conditions continue to rule in this market, and prices have shown a tendency to slip back. Makers, however, state that they have come to the limit of the concessions which they can make and, faced with the alternative of putting iron into stock pending a revival of buying, or damping down their furnaces, they will be compelled to adopt the latter course. The home market has been practically stagnant, but No. 3 Midland iron has been quoted at £5 5s. delivered Midland works. Continental iron has been offered, but few transactions are reported, as buyers seem disinclined to pay more than £4 10s. to £4 12s. 6d. f.o.b. Antwerp. A little business has passed in basic iron with some of the British steel works at a price of about £5 7s. 6d. delivered works. Most buyers, however, are adopting a waiting policy.

Semi-finished Material.

Quiet conditions rule in this market, but there seems to be more activity on the part of Continental sellers. One of the large Continental combines this week booked orders for steel bars at £7 10s. delivered Midlands, and for 2 inch billets at £6 10s. f.o.b., and it is reported that a Midland works placed an order for 1,500 tons of billets with a Luxemburg manufacturer at £7 6s. delivered. British works quote £7 15s. delivered Midlands for billets and Steel bars. There has been a fairly active inquiry for wire rods, but Continental supplies of prompt material seem to have been disposed of. For delivery in two months, £10 5s. to £10 10s. has been quoted, but it is reported that Belgian producers have accepted £10 f.o.b. Generally consumers seem disinclined to pay more than £9 15s. to £9 17s. 6d. f.o.b.

Finished Material.

The brightest feature in this market has been the revival in the Japanese demand for black sheets (unfortunately Japan has since received these black sheets in more senses than one), which has been on a fairly large scale. Some of the works are reported to be booked up for the end of the year and prompt material is difficult to secure at the scheduled price of £19 for Japanese gauges. In other directions business appears to have tapered off. Continental material for near delivery has become difficult to obtain, and prices are again somewhat firmer. For steel bars Belgian works are quoting for forward delivery £8 to £8 2s. 6d., whilst French works have quoted as high as £8 12s. 6d. The demand for joists has improved somewhat and the general quotation is £7 12s. 6d. to £7 15s.

Tin Plates.

Prices are unchanged at 23s. 1½d. f.o.b. 20 by 14 basis

Galvanised Sheets.

Dealing in this market has slackened off. The quotation for 24 gauge corrugated sheets in bundles is maintained at £18 10s. to £18 15s. f.o.b. It is interesting to note that German 16 gauge to 19 gauge sheets have been sold in the South American market at £24 and £20 respectively. German 24 gauge has been quoted at £18 10s. f.o.b.

Quotations: Pig Iron.

Cleveland No. 1, 115s.; No. 3, 105s.; No. 4 forge, 95s. 6d.; mottled, 94s.; basic, 100s.; hematite, mixed numbers, 100s.

Finished Iron and Steel.

Iron.—Crown bars, £12; best bars and angles, £12 10s.; hoops, £13.

Steel.—Billets, soft, per ton, £9 15s.; bars and angles, £9 10s.; tees, £10 10s.; joists and channels, £9 15s.; sheets, singles, £13; doubles, £13 10s.; lattens, £14 5s.; plates, ship £10, boiler £11; rails, £10.

Wire, Nails and Sheets.

Galvanised wire in 4 cwt. lots, fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7 ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 16s. 6d. to 18s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 19s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 22s. 6d. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 20s. 6d. per cwt. Bolts and nuts, 50 per cent. discount; Staffordshire common bars, 13s. 9d.; and galvanised corrugated sheets, 22s. 6d. per cwt.

Ten Per Cent. Reduction in Railway Rates.

Rates for merchandise conveyed by goods train are being reduced from 60 per cent. above the rates in force on January 14, 1920, to 50 per cent. above those rates. The new scale will apply to all goods, with the exception of agricultural products and requisites, which are already rated at the new rate level, and of raw materials for blast furnaces, which already stand at 40 per cent. above the old standard.

Mines Closing Down.

Owing to depression in the iron industry, the Hodbarrow iron ore mines at Millom, Cumberland, closed down on July 28. They have not been fully worked since they closed down about two and a quarter years ago, although work was partially resumed towards the end of last year. Of six furnaces at Millom Ironworks only one is in blast.

Burry Port Copper Works.

After being idle for several years the old copper works at Burry Port, which were recently taken over by Frickers Metals, Ltd., have been partially restarted.

Shipbuilding Slump.

The total of new vessels launched on the Clyde in July was less than 1,000 tons, and is the smallest month's output on record. Few new shipbuilding orders have been placed, and the continuation of the boilermakers' dispute makes the outlook discouraging for the producers of iron and steel shipbuilding material.

The Foreign Contracts Question.

Manchester City Council on August 1 accepted a French and an American tender for steel and brickwork respectively, on the ground that the French tender was £3,000 and the American £1,400 below the lowest British price. A member of the council drew attention to the vast amount of unemployment in the country, and pointed out that in Manchester alone 30,000 men were registered at labour exchanges. Another member rejoined that if there was to be a revival of trade in Britain it could only be brought about if there was a revival of business with the various nations that usually brought business to her. French journalists have found a subject near to their hearts in the attitude of other nations towards a possible alliance of French and German iron and steel interests. While "La Métallurgie" devotes much space to a reference by Sig. Falck, President of the Italian Association of Iron and Steel Manufacturers, to the prejudicial effects such a combine would inevitably exercise upon Italian industries, "L'Usine" gives prominence to what purports to be a quotation from the Monthly Review issued by Barclay's Bank, Ltd.:—England desires neither to see its continental competitors rid themselves too soon of their economic and financial embarrassments, nor to see France, after a victory over Germany, establish a kind of hegemony over pacified Central Europe.

Second-hand Machinery Market.

This, a prominent dealer stated this week, is very much depressed, and there is practically nothing doing except in one or two lines. Industrialists have been rather reluctant to increase their plants, although working at full pressure to-day, in view of the undecided state of the political world and the ever-increasing chances of further burdens in the way of taxation being put upon them, so that they are leaving well alone; and as long as we have this disturbing element of a certain section, there is no getting away from the fact that the public will not put further money into industrial concerns whilst this uncertainty still prevails. There are sales in certain small things, but in very few big articles, such as boilers and engines and other parts, pumps, motors, etc. All this class of machinery is practically uncalled for just now, except a stray order. Battery spares are very scarce and are bought when they can be picked up. The merchants of new material are now having a better time, although not too rosy, as the mines are very chary of buying stocks. There is a big scarcity just now of 6-inch piping, and, in fact, of other sizes. To sum up, there is very little doing and no animation in the second-hand machinery market.

Canada: The Iron and Steel Trade.

Satisfactory conditions still prevail in the iron and steel industry. Orders for locomotives and rolling stock are being filled as rapidly as deliveries of cast iron and steel will permit. The National and Canadian Pacific Railways have each placed additional orders for 1,000 freight cars. The marked development of gold and silver mining has resulted in an active demand for mining machinery and the construction of new electric power plants, while the expansion of existing systems is stimulating the electrical trade, which has for some time been rather quiet.

The British Empire Steel Corporation is restarting one of its blast furnaces, which have all been idle since the beginning of the strike on June 28. The company remains firm in its determination to refuse the demand for a 20 per cent. increase in wages.

United States: Steel.

Operations in the steel trade are rather lighter, and the average rate is about 86 per cent. of capacity, with the independents working at 83 per cent and the United Steel Corporation's mills at 91 per cent.

Pig Iron.

Buying has been light, and although it became more active towards the end of July, no large tonnages are reported to have changed hands. Prices are nominally unchanged, although occasionally they are reported to be slightly shaded. The production of pig iron in July was 3,679,810 tons, compared with 3,666,412 tons in June, which, on the basis of a daily output, would indicate a drop of 109,000 tons for the month. It is expected that the figures for August will show a further fall in production, as additional furnaces are expected to close down. During July about 30 furnaces ceased to operate.

Finished Materials.

Buying in finished materials has fallen off and consists chiefly of moderate tonnages to meet day to day requirements. The one exception is the demand for tank plates, which is brisk, the Chicago tank builders having placed orders for 15,000 to 20,000 tons.

The West Springs Plant—Tin Industry's Prospects—Cotton in the Union and Rhodesia.

Industries | The South African | Commerce

Mining & Engineering Journal

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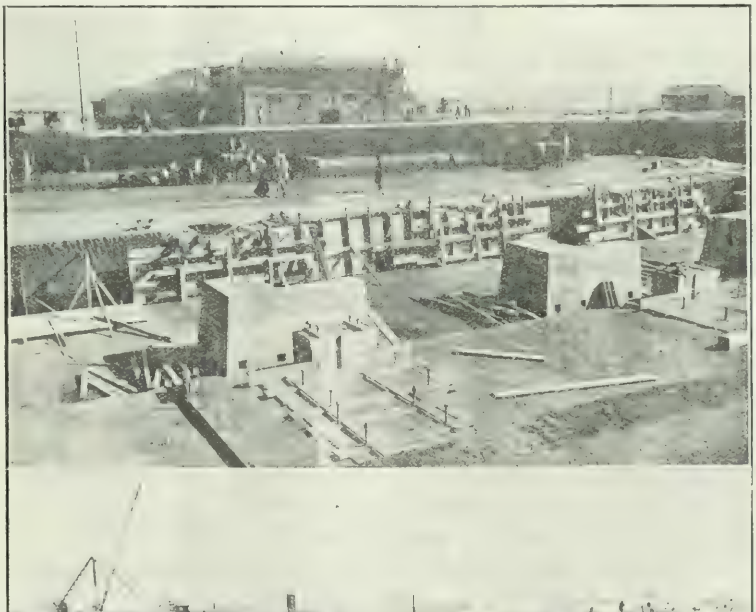
Finance | Established 1891. | Transport

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL, SATURDAY, SEPTEMBER 15, 1923 No. 1668

Progress of Construction at West Springs.



Top photo (looking south): Foundations for Tube Mills on north side showing Recovery House partly erected.
Bottom photo (looking east): Foundations for Tube Mills.

Photos specially taken for the "S.A. Mining and Engineering Journal" [illegible]

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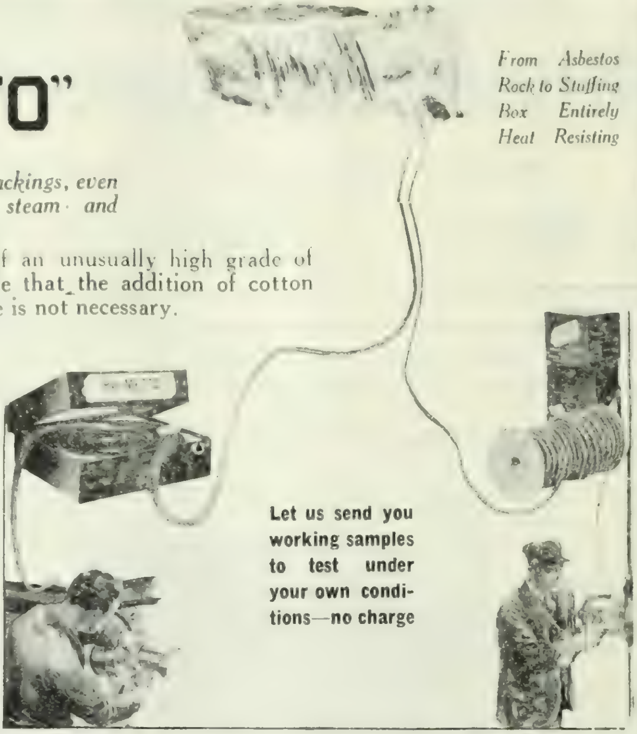

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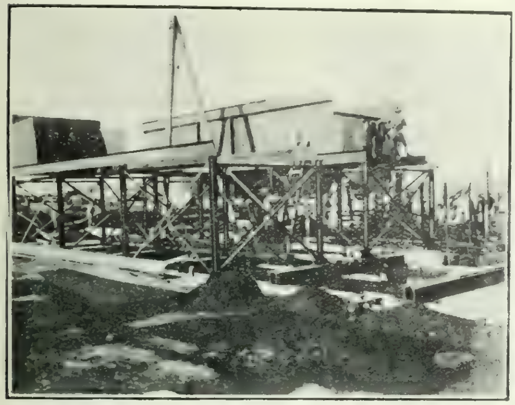
The West Springs Plant.

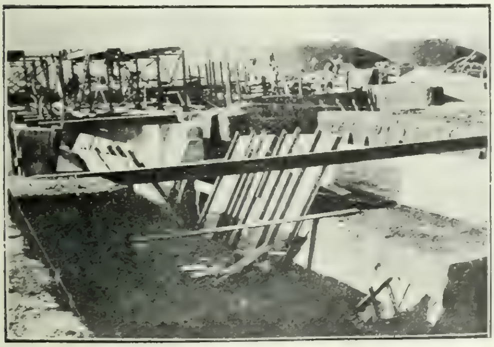
SATISFACTORY PROGRESS OF CONSTRUCTION WORK—AN EQUIPMENT THAT WILL CONSTITUTE THE LAST WORD IN RAND METALLURGICAL PRACTICE.

Widespread interest is being taken in the new metallurgical schemes which are being put into operation on the Far East Rand. The close attention of metallurgists not only in Southern Africa but throughout the gold mining world is in a large degree focussed on the departures from which has hitherto been regarded as standard or orthodox practice on the Main Reef Series. The groups primarily responsible for this technical innovation have been the Anglo-American Corporation and the Johannesburg Consolidated Investment Company, and in our last issue an important announcement was made in regard to the employment of this process on the basis of a royalty payable to the Anglo-American Corporation. As is generally known, both the Springs Mines, Ltd., and the New State Areas, Ltd., have already translated the ideas of the new metallurgy into actual practice, and we are this week enabled to give as our frontispiece two new photographs illustrating the progress of constructional work at what will be the next property to adopt the new metallurgical scheme—that is to say, West Springs, Ltd., which will commence winning gold next year. The capital cost of this "all sliming" plant is considerably less than that of a plant of similar capacity and of the old standard type.



Steel work in connection with Butters Filter Hoppers.

CONSTRUCTION WORK AT WEST SPRINGS.



Residue Pit, Butters Plant.

At West Springs as at Springs Mines the recovery of the gold will be carried out entirely by cyanide solution without any amalgamation, and the precipitation of the gold will be effected in Merrill presses working in conjunction with the Crowe vacuum process. The new plant at West Springs will be of a very compact type, enabling close and continuous supervision to be more effectively maintained than does a plant of the other type. This feature, in combination with the entire elimination of the treatment of sands and of amalgamation will, it is confidently expected, result in a low figure of reduction costs being attained. As is shown by the photographs constructional work is progressing satisfactorily at West Springs, and already a very considerable amount of the preliminary work incidental to the erection of the large permanent plant has been achieved.

Mining Men and Matters.

According to advices from London, in addition to Mr Leopold Albu, other recent visitors to the new Canadian mining fields have included Mr Brett and Mr Trevail Williams.

* * *

The King of the Belgians has conferred upon Mr Magnus Poulsen, consulting engineer of the Société Belge Industrielle et Minière du Katanga, the distinction of Chevalier de l'Ordre du Lion in recognition of his work in the Katanga.

* * *

The late Mr. Chas. E. Musgrave was a familiar figure at the periodical meetings of the South African Section of the London Chamber of Commerce, for as the secretary of that important body his advice was frequently sought not only by South African traders regularly established in the metropolis, but also by those visiting commercial men from the Union needing such information as he, almost alone, in the mercantile world of London, was able to supply. To them, therefore, news of his death after a short illness will come as a painful surprise. The late Mr. Musgrave, who was in his 63rd year, entered the service of the London Chamber in 1882, having previously been on the staff of the "City Press" and "Citizen." He was appointed assistant secretary of the London Chamber of Commerce in 1884 and secretary in 1909. Mr. Musgrave was also secretary of the British Imperial Council of Commerce, in which capacity he organised the eighth Congress of Empire Chambers of Commerce in London in 1912, and he also assisted in the arrangements for the ninth Congress at Toronto in 1920. He frequently appeared as a witness before Parliamentary and Departmental Committees and Royal Commissions. South Africa was represented at the memorial service at St. Swithin's, London Stone, and at the funeral.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

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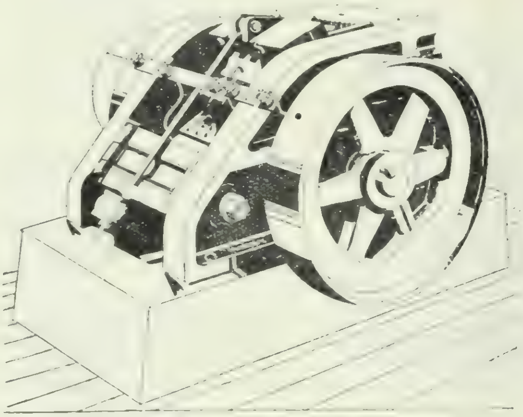

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New South African Diamond Diggings.

BRAKFONTEIN, HOLGAT AND VENTERSDORP—SEVERAL GOOD FINDS IN THE LICHTENBURG DISTRICT—THE BACKVELD'S MIGRATORY POPULATION OF GEM SEEKERS.

In our last issue a special correspondent dealt at some length with the new Orange River alluvial diamond diggings and made particular reference to Brakfontein. We are enabled in this issue to reproduce photographs of Brakfontein. These illustrations give a good idea of the general air of bustle that pervades the place. As our correspondent stated last week there are at present something like 3,000 persons on Brakfontein, and numerous good finds are reported from there.

The Lichtenburg Fields.

According to "The Star's" Lichtenburg correspondent, Lichtenburg is once again in the throes of the diamond fever. The centre of renewed activity is the recently proclaimed farm Holgat, the property of the German missionaries. Diggers are leaving the adjoining fields, and feverishly pegging out claims there.

A few weeks ago there were just a few prospectors on this farm. The scene has now changed, and for a distance of two miles the ground has been rapidly broken up by about 600 gangs, preparatory to washing.

Sterkfontein and Putfontein, the adjoining fields, are practically deserted. The butcheries, cafes and stores, as well as the numerous peripatetic traders, have followed the rush, and are busily re-erecting their businesses on the new site. Thus a township has been created, as it were, overnight. A billiard room has been fixed up quickly, and a boxing match has been arranged for between two heavy-weights, admission to the "ring" being only 3s. "Pussyfoot" canteens are doing a nice but dry business, and, judging by the volubility of some of the diggers, there must be some haunts in the diggings not quite so dry.

Small Proportion of Blanks.

Money appears to be more plentiful at Holgat than is usual at these places and there is a greater spirit of hopefulness about these fields—a welcome change in these glum times. What is remarkable about this sudden boom is that there have been no sensational discoveries, although stones of 31, 17½ and 15 carats were found quite recently. The attraction appears to be the quality and the comparatively few blanks. Any quantity of small stones are being found at the daily washes, ranging from ½ to 3½ carats, but the quality and the good prices obtained makes this kind of digging fairly payable.

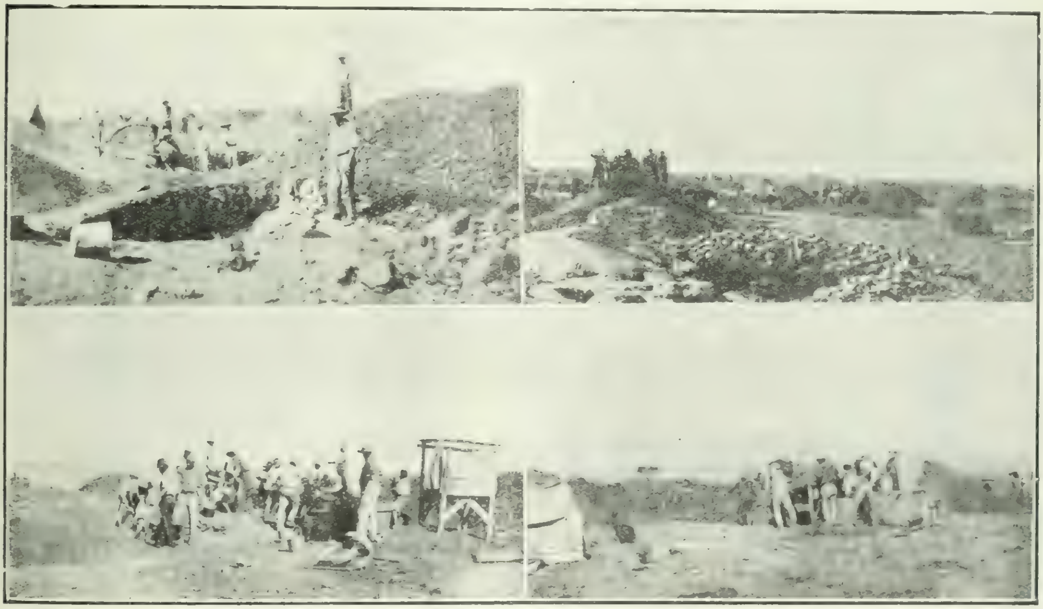
Diamonds at Ventersdorp.

It is stated, too, that the Ventersdorp town lands are being prospected for diamonds, and it is hoped to locate a new alluvial field of some importance. A large area of promising diamondiferous gravel is being tested. This gravel seems to occur in two formations. One stretch has been continuously proved for a distance of two miles, running due east and west, showing, under nine inches of overburden, a bed of quartz gravel approximately 2 feet 1 inch thick, and underneath that again is a second bed of "Kafir corn" gravel, approximately 3 feet 4 inches thick. The area has been proved by numerous square holes from 3 feet to 4 feet in diameter to below the depth of the gravel beds.

There is another deposit running in a south-westerly direction. The gravel here is of the "[illegible] chocolate" variety, and has no overburden whatever. It is from 2 feet to 2 feet 9 inches thick. This has been followed and opened up for a distance of a mile and a half also by square holes about 3 to 4 feet square. The farm has been pitted with holes in all directions in order to locate the gravel, and there are 25 holes actually sunk on the deposits, which run from the Ventersdorp area into the Heidelberg district. Should the yields justify the current beliefs it is expected that the new area, when it is thrown open, will hold from between 3,000 to 4,000 diggers.

The new diamond discovery is on a branch line, 30 miles from Welverdiend, and should it prove to be all that it promises, diggers will find it an ideal position. The branch line runs right through the area, water is near and plentiful, transport is reasonable and living is cheap.

NEW ORANGE RIVER DIAMOND DIGGINGS.



Photos taken by our Special Correspondent at Brakfontein: Top left-hand: A family party diamond digging. Top right-hand: View of portion of diggings. Bottom left-hand: An old digger and his gang. Bottom right-hand: "Washing up."

The Improving Prospects of Tin.

PRICE NEARS £200 PER TON—WHAT IT MEANS TO THE PRODUCERS—OUTPUT AND PROFITS.

The rapid and sustained rise in the price of tin is one of the bright features of the moment. The latest cabled quotations of £199 per ton is about £12 above the highest price touched last year, but in 1921 the metal reached £210 buyers per ton. At anything over £180, most of the Nigerian and all the Far Eastern producers can make good profits. The latest Union Government returns show that our July tin output was 332.64 tons, valued at £34.888.

[illegible] due doubtless to the renewed [illegible] of the [illegible] in Europe and the possibility of Germany returning to the market at an early date. According to a London correspondent by this mail, the first half of this year witnessed a steady advance in tin values, thanks to the extraordinary active demand for the metal in America, where the tin-consuming industries were operating at a record rate, and where, encouraged by excellent trade, dealers and others bought more fully than ultimately proved desirable. Elsewhere, however, interest in the metal was far from sustained, Europe remaining under the cloud of general depression and lately, consequent upon the withdrawal of America from the market, prices have reacted. It will be somewhat surprising if American consumption is maintained at its previous rate. At present, world demand is comparatively poor, and it will probably be well towards the European autumn before consumers generally come forward to renew their stocks. The statistical position, however, has undergone a notable improvement, attributable mainly to the keen American demand already mentioned. Despite the fact that shipments from the Straits to Europe and America during the year ended July 31, 1923, amounted to 62,755 tons, compared with [illegible] tons the previous year, "visible supplies" on July 31, 1923, were down to 17,970 tons against 20,364 tons on July 31, 1922, a reduction of 2,400 tons. Quite appreciable, too, is the diminution in the "invisible supply" represented by the stocks of tin held off the market by interests in the Straits and Dutch Indies since the beginning of 1921; of the original stock of 17,000 tons probably 1,500 tons have already been sold, making a total reduction in the visible and invisible supply of nearly 4,000 tons during the past twelve months. With any favourable development in Europe a considerable improvement in price—such as has now been seen—was anticipated. It should be noted that the price has improved in the past three weeks from £180-185 to £199 per ton, which speaks for itself.

Effect on Transvaal Producers.

Naturally, the effect of all this on the Transvaal producers is highly welcome. Every pound increase in the price after a certain figure is mainly profit, and if the market holds, and there is every indication that it will, our producers will all be seen working at full speed. Both Leeuwpoort and Rooiberg have been patiently preparing for this revival, and both properties will doubtless avail themselves of the opportunity to work up to full capacity after a period of lean years.

The following official figures reflect the history and fluctuations of the South African tin industry for the past twelve years and in detail for the past nineteen months:—

Period.	Tons.	% of Pure Metal.	Value. £
June to December, 1910	1,774.500	67.96	176,743
Year, 1911	3,533.729	67.26	411,871
Year, 1912	2,932.208	66.64	367,699
Year, 1913	3,671.9[illegible]7	68.68	436,550
Year, 1914	3,429.234	66.10	311,391
Year, 1915	3,441.353	66.94	331,420
Year, 1916	3,264.068	66.16	339,571
Year, 1917	2,678.560	66.80	346,016
Year, 1918	2,206.042	72.16	140,995
Year, 1919	1,630.168	76.21	277,925
Year, 1920	2,463.219	69.54	135,680
Year, 1921	1,424.534	64.59	139,688
Year, 1922	612.154	68.16	59,986
1922—July	94.722	66.02	8.913
August	30.200	71.33	3,217
September	69.996	65.62	6,783
October	33.600	70.54	3,859
November	25.559	72.17	2,958
December	38.310	72.14	4,434
1923—January	116.370	62.31	12,050
February	47.600	65.44	5,948
March	70.060	68.43	9,583
April	63.700	70.59	8,345
May	91.980	71.54	11,500
June	41.800	68.75	4,950
JULY	332.640	63.62	34.888

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Sept. 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.

November 6th.—New Modderfontein (a), 10.30 a.m.; Nourse Mines (a), 11.30 a.m.; Consolidated Main Reef (a), 12 noon; Modderfontein East (a), 2.30 p.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

December 13.—Glynn's Lydenburg (a), 3.30 p.m.

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More Gold and Higher Value.

NATIVE LABOUR SLIGHTLY BETTER.

Transvaal Chamber of Mines return for August shows increases all round. The gold produced exceeds the July total by over 15,000oz., it realised 9d. per oz. more than in July, and the total value was thus over £96,000 above the July figure. The native labour position also shows a distinct improvement, the number employed at the end of last month being 1,527 more than in the previous month. In comparing the output it has to be remembered that there was one more working day last month (27), as compared with July. When this is taken into account the average daily output works out at about 200oz. per day less.

One of the most satisfactory features of the individual returns is an increase of 1,126oz. in the production of the E.R.P.M. It will, in fact, be seen that increased outputs are fairly general, though there are 16 exceptions to the rule. New State Areas, it will be seen, produced well over 10,000oz.

Native Labour.

The returns supplied by the Witwatersrand Native Labour Association show the following results:

	Aug.	July.
On gold mines	167,600	166,143
On coal mines	16,156	16,020
On diamond mines	3,107	2,893
Totals ..	186,863	185,356

Total output for August .	769,371oz.
Increase on July...	15,065oz.
Witwatersrand output	747,576oz.
Increase on July	12,258oz.
Outside districts output . . .	21,795oz.
Increase on July... .	2,807oz.
August value ...	£3,462,170
Increase on July... . .	£96,079

Individual Returns.

	Oz.	Inc.	Dec.
Aurora West	3,380	—	10
E.R.P.M.	30,576	1,126	–
Robinson Deep	23,271	405	
Simmer and Jack . .	13,989	619	-
Springs	25,859	1,033	—
City Deep	41,768	338	—
Geduld Prop.	23,984	120	–
Luipaards Vlei .	3,494	—	361
Meyer & Charlton ...	8,002	45	—
Modder B.	31,543	—	244
Modder Deep .	24,392	658	—
New Kleinfontein	11,766	228	-
New Modder	54,623	—	143
Robinson ...	3,611	59	—
Rose Deep ...	12,918	—	113
Van Ryn Estate	9,601	728	–
Village Deep	15,113	—	1,436
Witwatersrand	9,528		900
Wit. Deep ...	11,509	—	520
Wolhuter .	7,186		355
Nourse Mines	14,005		104
Crown Mines .	65,867	—	1,643
Modder East .	11,889	693	–
Randfontein ..	51,800	1,265	
Van Ryn Deep ...	28,125	380	—
West Rand Cons.	9,470	—	308
Government Areas	67,056	4,500	—
Langlaagte Estate .	28,345	—	59
New Goch	3,851	125	—
New Primrose .. .	4,153	—	154
Brakpan Mines	28,675	1,176	—
Cons. Main Reef	16,920	—	1,618
Ferreira Deep	9,496	1,258	
Geldenhuis	13,757	178	—
Durban Deep	10,627	233	–
New State Areas	10,877	6,238	—
Miscellaneous	6,302	—	1,556

Outside Districts.

	Oz.	Inc.	Dec.
Sub Nigel	6,047	50	–
Transvaal G.M. Est.	6,089	397	
Glynn's Lydenburg .	1,766	184	—
Miscellaneous .	7,896	2,286	—

The Cinderella-E.R.P.M. Inquiry.

A "Government Gazette" notice intimates that H.R.H. the Governor General has been pleased to appoint a Commission: (1) To inquire whether any equitable terms of amalgamation or other working arrangement between the Cinderella Consolidated Mines, Ltd., and the East Rand Proprietary Mines, Ltd., can be devised with the object of ensuring the opening up and working of the Cinderella Company's property, in whole or in part, and the continuation of operations by the East Rand Proprietary Mines. (2) To negotiate with the respective parties for the acceptance by them of such terms or working arrangement. (3) To report to the Government the results of such inquiry and negotiations, and to make any further recommendations with reference to the matter which the Commission may consider desirable in order to achieve the object stated in (1). The members of the Commission are: Mr. Walter Solomon Webber, M.L.A., chairman; Sir Robert Nelson Kotze, Kt. (Government Mining Engineer), and Mr. Walter Edward Hudson; with Mr. James Robertson Mackinlay as secretary.

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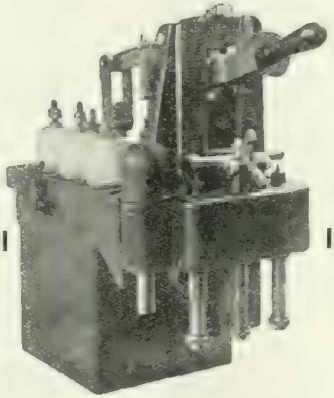

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COTTON.

Barberton Cotton.

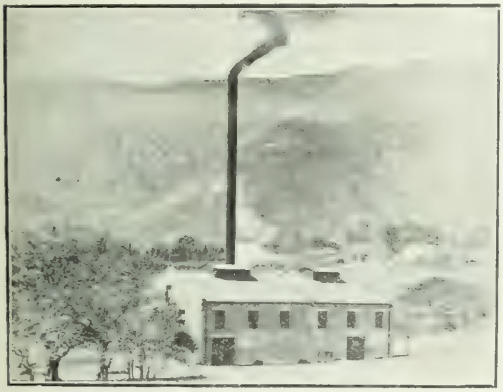
OPENING OF THE NEW GINNERY—A PROMISING OUTLOOK.

(By a Special Correspondent.)

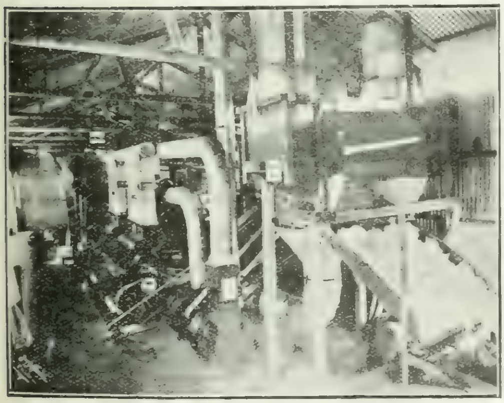
The accompanying photographs were taken at the opening of the Barberton Ginnery on August 25th last. This institution is the result of the excellent work done by the Barberton Cotton Co-operative Co., Ltd., with Mr. E. T. E. Andrews at their head. The venture has been financed by the Land Bank, and as it is the first limited company to receive aid from the Land Bank its progress will be watched with keen interest. Needless to say, the bank is fully protected by the members of the co-operative company against loss. This season's accumulated stocks at the ginnery amount to about 1,400 bales of seed cotton, averaging 400 lb. to the bale, and this, together with stocks already forwarded to Pretoria and Durban in the earlier part of the season for treatment, makes a creditable showing for a new industry. Much better results are anticipated for the coming season. Many new growers are falling in line, and those already established are doubling their acreage. Of this season's output thus far graded by the Government grader, 71 per cent shows a staple of one and three-sixteenth inches and longer, and this percentage of seed has been classed "suitable for planting." It now becomes an established fact that this district can grow cotton and grow it profitably under less favourable market conditions than those prevailing at present, and produce an article second to none in South African and American production. The new gins will deal with fairly extensive crops, and the plant could be augmented at any time. The machinery is of the very latest design, and produces lint like snow flakes from seed cotton that has been indifferently gathered and containing leaf-trash and dirt

B. C.

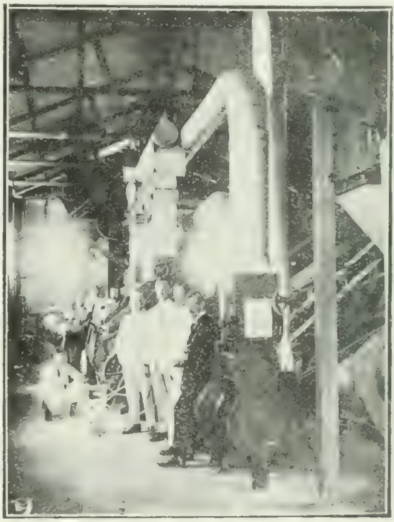
BARBERTON COTTON.



The Power Plant.



Interior of Ginnery.



Some leading Barbertonians inside the Ginnery.

AN AMERICAN VIEW OF THE "MINING JOURNAL'S" COTTON ARTICLES.

An American correspondent, who has had some experience of South Africa, writes us as follows:—

I have read the article on cotton-growing in the Journal of the 30th June. It is a fine article. With 160 million people on the African Continent, with hundreds of millions of acres of good cotton-growing lands, it's a shame that they do not supply themselves and a great part of the world with goods made of cotton. They do not seem to have too much horse-sense; too lazy I guess; too full of politics and graft. All over the lower part of Natal and Zululand cotton can be grown. The labour for cotton-picking is cheap there, as compared with the Southern Cotton States of this Union. I have sent to the Department of Agriculture in Washington for some bulletins on cotton-growing. I am going to mail them out to you; they may be of use. I am busy lining up some catalogues of portable cotton gins, such as will meet the requirements of the small producer. Your Government, like most others, appears to be busy with foreign affairs—other people's affairs—instead of building up their own country.

Rhodesian Cotton.

SOME FACTS AND FIGURES ABOUT THE INDUSTRY.

A GINNERY AT SALISBURY.

The importance of cotton-growing as a permanent industry is thoroughly recognised in Rhodesia, and the cotton-growers there are taking active steps to ensure co-operation and effective organisation. A well attended meeting of those interested in cotton-growing was held in the Library Buildings, Bulawayo, last week, and, after considerable discussion, it was decided to appoint a provisional committee of seven members, who were to elect their own chairman. The following were the gentlemen elected: Messrs. R. Aserman, F. E. Goodridge, Dan Vincent, C. H. Olsen, A. G. Wayte, W. E. Kay, Capt. Peel. Mr. R. Aserman was unanimously elected as chairman and Mr. W. A. Carnegie acted as secretary.

Mr. H. W. Taylor, the Government expert, said: The subject of cotton cultivation and how best to increase the production thereof is now receiving the attention of the farming public in widely separated parts of the globe, while commercial men the world over are concerned with this problem. To the people of South Africa and to Rhodesia in particular the problems in connection with cotton-growing are of vital importance. Rhodesia wants more settlers and these settlers must be able to produce those crops for which there is a ready and remunerative market. Cotton promises to be a crop which will fulfil this requirement. The production of cotton on a remunerative scale would provide a means of settling a larger population on the land, the cultivation of the crop would increase land values and add to the incomes of those already established on the land, and the increased spending power of the farming population would be reflected in the increase in business done by commercial men of the country. The cotton business in Great Britain is of enormous proportions. It is estimated that the huge sum of £500,000,000 is invested in the cotton trade and that 10,000,000 people are dependent, directly or indirectly, upon the cotton industry for their daily bread. Naturally, any economic condition affecting this trade is of importance not only to those directly concerned, but the nation as a whole.

Supply Falling Off.

The annual normal consumption of raw cotton in the United Kingdom is about 3,000,000 bales of 500 lbs. each. Four-fifths of this supply comes from the United States of America. The consumption of cotton by American mills is rapidly increasing. During 1922-23 it is estimated that the American mills will consume 6,150,000 bales, or, roughly, 61 per cent. of the cotton grown in that country. The price of cotton has increased during the past few years from 7·26d. per pound for 1913-14 to the present time, when the price of middling American is, roughly, 13·5d. per pound. The production in America during 1914 was approximately 15,000,000 bales, and for 1922-23 roughly 10,000,000 bales. This decrease has been due to the ravages of the Mexican boll weevil and to shortage of farm labour. Both factors are difficult to control. Under present conditions it would appear that a crop of 15,000,000 bales of American cotton may not be produced for many years to come. As the cotton trade requires approximately that amount of American cotton each year, the price is likely to remain high for several years to come.

Ginnery at Salisbury.

Mr. Taylor went on to speak of a proposed ginnery. He said: "A man of private enterprise, Major Cooper, has offered to supply the necessary machinery and provide a certain amount of capital, provided the remainder can be found for the purpose within the country, and I feel reasonably certain that this can be done and that adequate facilities for ginning and pressing cotton will be available. The location of the ginnery is of interest to everyone concerned. After due consideration Salisbury has been provisionally selected as the most suitable centre. "Beira is the natural port through which our cotton will be sent oversea. With the exception of a very small area, all cotton sent to Salisbury for ginning and baling will be en route to the port. Also, there will probably be a larger amount of cotton grown, in the immediate future, within the districts of Mashonaland.

Central Plant.

It is thought that in the beginning there should be one central plant rather than several small plants in several parts of the country. Cotton is a commodity which sells by grade, and it is necessary to have the cotton graded before it is ginned and then the lint classified after it is baled. This can be more easily done at one centre than at several centres. It can be definitely stated that the cost of ginning and baling will not exceed 1½d. per pound (lint), excepting for small parcels for seed purposes, which may be slightly higher.

"Major Cooper, who is an experienced man at this work, naturally expects the support of cotton-growers, but only asks that they guarantee to grow collectively a minimum of 2,000 acres of cotton, to be ginned by him at 1½d. per pound.

"In regard to selling, there is no difficulty. There are buyers in Durban who are prepared to buy our cotton f.o.r. Salisbury if the grading is properly carried out in the same way as in the Union, and that specimens be submitted, and will pay for what they purchase upon receipt of shipping documents. This will enable farmers to obtain the money for their crops as soon as the cotton is ready for delivery."

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Ginnery to Cost £7,500.

Mr. F. L. Hadfield stated that he had met Major Cooper, who had definitely decided to erect the ginnery at Salisbury. The expert officials were at Salisbury, and he thought it would be better to have the first ginnery there under their eyes. Later on he hoped they would have one in Bulawayo. They would have the advantage then of being able to go to the one at Salisbury and see how everything was done. Major Cooper was prepared to go to the extent of £7,500 in erecting the ginnery, which would consist of four or five gins, in order that the work might be expeditiously performed so that the farmer would get a quick return on his cotton.

Mr. Hadfield mentioned that in connection with the seed, Major Cooper had twenty tons of Improved Bancroft, and he (Mr. Hadfield), on behalf of his firm had taken the whole of this amount, which could be obtained at 30s. per package of 100 lbs. In connection with Major Cooper's stipulation that 2,000 acres should be guaranteed, Mr Hadfield explained that this guarantee could not be given except by legislative measures. When he had approached Sir Charles Coghlan in this connection he had replied that it was not the policy of the Government to allow monopolies.

Question of Experts.

Continuing, Mr. Hadfield said he had told Major Cooper this, and he was still prepared to go on with the ginnery. The price at which Major Cooper would gin at would be fixed by the Agricultural Department. With regard to the question of Government experts, Mr. Hadfield remarked that the main interests of the Chartered Company were in Mashonaland, but that would not be the case with the new Government.

Requisite Conditions.

Mr. Taylor, in dealing with the conditions necessary for successful cotton-growing, said: Cotton, in common with other farm crops, requires certain conditions as to soil and climate for its production on a successful and commercial basis. The climatic conditions required for profitable cotton culture are as follows: (1) A growing period of six months or more without frost; (2) a moderate well-distributed rainfall during the growing period; (3) plenty of sunshine and little or no rainfall during the maturing and harvesting period. The cotton plant requires a rather long period for full development and can be severely damaged by frost before the bolls reach maturity. After the bolls are mature, whether they have opened or not, frost will do very little damage. A rainfall of 20 to 25 inches properly distributed during the months from November to April is adequate for cotton growing. From April until the following planting season little or no rain should occur. These conditions obtain in several areas of Rhodesia and you know better than anyone else whether these conditions are found in this section of the territory.

The soils which give the best yields of cotton are sandy and light clay loams and alluvial soils. Soils which are abnormally rich in plant food do not usually produce profitable yields of cotton, as the plants develop vegetation rather than fruit and the results are usually disappointing. On the other hand, soils which are very poor in plant food do not produce profitable yields of cotton unless the soil is treated with an application of fertiliser or manure. Soils which will produce 6 to 7 bags of maize per acre are sufficiently fertile for cotton-growing without the aid of fertilisers or manure, but a slight application of superphosphates will often increase the yield and hasten maturity. For successful cotton culture the soil used must be well drained and should have been under cultivation to some other crop or fallowed during one rainy season. Cotton does not thrive on virgin soil freshly ploughed.

The Brighton Diamond Cutting Works.

At the time the diamond cutting works were in operation in Brighton it is officially stated there were 700 qualified men on the pay roll of the company, and that upwards of 200 men were in course of being trained. These figures are of interest in view of the recent announcement that the establishment of a cutting works at Kimberley was a possibility in the not too remote future. In order to assist in the reopening of the cutting works in Brighton the British Government proposes to guarantee the issue of £150,000 debentures secured on the assets of the company to be formed, and which will consist of the old buildings, plant and other assets of the old company, which are to be purchased from the liquidator at a cost of £300,000, plus £100,000 cash capital guaranteed by Messrs. Lewis and Marks, and plus the stock or cash represented by the debentures. There was certain opposition to the Bill in the House of Commons which caused its postponement until November, and it is difficult to see on what grounds such opposition was founded. The Government guarantee is secured on assets worth at least £550,000, and is protected by first lien as against the remaining capital liabilities of £400,000, which only rank for repayment after the debenture issue is liquidated. As this £400,000 is to be put up by those best acquainted with the industry, the Government's risk appears to be negligible. In face of these facts and figures, it is curious, to say the least, that there should be serious opposition, mainly on the part of Labour members, to the proposal. The experiment of providing occupation for the unemployed, particularly for those physically unable to compete in the labour market owing to wounds, is one that deserves support, and even if not entirely successful is certainly preferable to the debilitating practice of donating doles.

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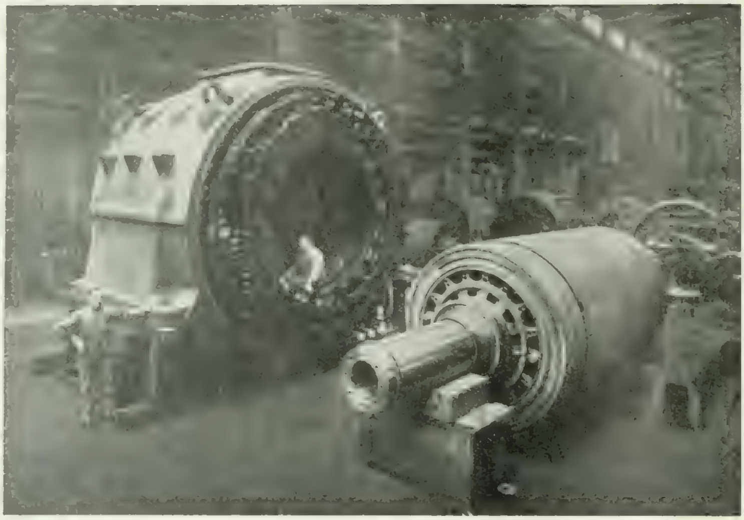

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TOPICS OF THE WEEK.

The Business Outlook.

Too late for notice in our last issue, the outgoing President of the Witwatersrand Commercial Exchange, Mr. T. W. H. McEwen, delivered a very thoughtful valedictory address at the annual meeting of the Witwatersrand Commercial Exchange. Mr. McEwen dwelt upon the "stress and strain," "discontent and disappointment" of the past year, and he very reasonably laid the blame, not upon South Africa, but upon the condition of Europe. While not disposed to attribute to the Government all our troubles in this country, he did not entirely absolve it from blame. And he quoted chapter and verse in support of his views. "Commercial men," said Mr. McEwen, "found to-day that the Union of 1910 had brought no benefit to the taxpayer, and while the British Government, with its enormous burdens and war debt, was actually reducing its taxation, in the hope of assisting industry, it would be found that the Union Government, instead of economising, had been, and still was spending more money, and there was the peculiar situation that while taxation was falling in England, it was rising in South Africa. The mercantile community of the Witwatersrand was being heavily penalised, and most unfairly so."

That, we believe, is a plain and simple statement of the facts of the case. Mr. McEwen will have the support of the whole business community in his protest against the action of certain Government departments in making purchases through the High Commissioner in London "while no opportunity to submit a tender was given to the man on the spot, in spite of the fact that he had the ability and all the machinery at his disposal satisfactorily to submit an intelligent tender which he was justly entitled to consider his right."

After giving a piece of sound reasonable advice to those responsible for our local industries, Mr McEwen summed up the situation in a few carefully chosen words. "It would be noted," he said, "that although the prospects of an early improvement in trade were still somewhat uncertain, and in his opinion were entirely contingent upon a peaceful settlement of European politics, there was, nevertheless, much to encourage one when they began to discuss South African conditions separately. As an exporting country they were making very considerable progress, and their credit was good in the world's financial market. If those in power, as well as the general body of people, would take a more thoughtful view of many of these problems, there was not very much to fear with regard to the future of this country."

We can only hope that here again Mr McEwen is right, and that when his successor in the chair, Mr W. F. T. Harvey, comes to make his retrospect of his year, he can endorse these sentiments.

Commerce and Industry Overseas.

Dealing with the forthcoming Economic Conference our London Correspondent in mail week writes as follows:—

Under the heading of Empire Trade, a recent issue of the "Daily Telegraph" contained a well-reasoned article on certain aspects of the forthcoming Imperial Economic Conference, to which more and more attention is being devoted by business men and economists in London and the big provincial centres.

It is hoped and confidently expected that the Government intends to submit to the Conference a proposal to set up a permanent body "charged with the duty of following up the conclusions reached, and helping to secure that they will become in due season the subject of appropriate action." The success of the Imperial Shipping Committee has evidently been responsible for this suggestion. Since it was set up three years ago, on the recommendation of the Imperial War Conference, it has issued a series of valuable reports, which have gone far to clear up a good many misconceptions. There would be certain obvious advantages in creating an authority of the kind now proposed, which would always be in session, considering as they arise, all matters connected with trade generally. Such an Empire Economic Council could not be anything more than advisory; it would examine current problems in all their bearings and report its conclusions. It would then be for the respective Governments to take such action as they might consider desirable. The Dominions—as well as the Crown Colonies—would be represented in association with this country; and the Empire would possess, in effect, a department of economic research and inquiry.

Figuring upon the agenda are the following important subjects:—

Imperial Communications
Commercial Intelligence
Forestry.
Collection and Distribution of Empire Statistics
Trade Development
Importation of Breeding Stock.

The last is a subject literally bristling with difficulties. It has already been responsible for somewhat embarrassing differences of opinion among cattle experts on this side, for so far as Canada is concerned—and Canada is the only Dominion hitherto coupled with import proposals—English stock breeders fear their efforts to improve the admitted high standard of British stock will be jeopardised and nullified by such importations.

But of even greater importance than this thorny subject, according to the writer in the "Daily Telegraph," is the question of Imperial Preference. He says:—

This ranked as part of the fabric of the Empire, endorsed by the Dominions and also by the people of this country. We give them a preference in certain commodities, as they, in varying measure, and in other directions, show preference to us. These arrangements may possibly be capable of further development, and British Ministers as well as the people of this country generally will accord to any proposals the most sympathetic consideration. It must be realised by our partners that a good deal of headway has been made since the Conference of 1907. At the General Election of 1918 Imperial Preference became a plank in the Government's platform, and effect was given to its pledges in the Budget of the following year. The measure of preference then given was estimated at the time to represent a loss of revenue in the first full year of £3,330,000. Whether any further steps can be taken in the same direction without involving such a radical change in our fiscal system as might endanger the progress which has been made is a matter for the Conference.

Australia certainly, and probably New Zealand also, desires to submit suggestions and the Government has left the door open for their free discussion. It would be of great advantage if the Dominions could evolve a united policy; it might be in the nature of a compromise, but it would bring the issue down at once to the level of practical politics.

It is somewhat curious that at this particular juncture a correspondent in the "Manchester Guardian" should seize upon one aspect of the Preference policy to drive home an argument as affecting South Africa. He says:—

The little tariff war between Australia and South Africa, to which I drew attention some weeks ago, is generating a good deal of heat, probably with a view to the Imperial Economic Conference. Maize and wool are the principal bones of contention, and just now it is maize. South Africa has such a bumper harvest that the Union alone will have 6,000,000 bags for export. Australian farmers have already secured a protection of 6d. a bag against the "foreign" maize of South Africa, but they say that unless the tariff wall is raised high enough to keep out the corn Australian maize cultivation will be ruined. We are told that it costs the South African farmer 1s. 6d. to produce a bag of maize, as against 3s. to 6s. a bag in Australia, the retail price of which is 15s. A "sixpenny" tariff, says the Australian farmer, is an absurd barrier against the present "dumping" threat of the South African farmers. The Duke of Devonshire will need to be very wide awake if he is to find a means for adjusting this tariff war.

The Crown Mines and the Colour Bar.

That dominant industrial and political problem of the Transvaal—the Colour Bar—has assumed a fresh significance as a result of the judgment delivered by Mr. Bovill, a Johannesburg Magistrate, in "D" Court on Saturday last. It is safe to say, too, that no more important judgment or one likely to have more widespread eventual effect than Mr. Bovill's ruling has been delivered in a Transvaal Court of Law, and in view of the tremendously important issues attaching to this judgment, it is probable that the matter will not rest here, but that it will be heard before the higher Bars of Justice of the Union. Gavin Hildick-Smith, manager of the Eastern Section, Crown Mines, was charged with failing to enforce the requirements of Section 179 of the Machinery Regulations. This regulation, the Crown claimed, required that the operation and attendance on machinery should be in charge of a competent white shiftsman. The accused, it was alleged, had failed to enforce the regulation in allowing a native named Stephen to be in charge of an electric locomotive. Mr. Elliott prosecuted, and Mr. R. Ford (of Messrs. Van Hulsteyn, Feltham and Ford) defended. As the result of evidence led during the hearing of the case, it appeared that Stephen, the native, was a competent engine-driver. The haulage in which he worked was in charge of a white ganger named Le Roux. About 18 months ago, it was stated, white men used to drive the engines, but since the industrial strike the Europeans had been displaced by natives. Mr. Elliott in his address quoted from the Machinery Regulations, Section 179, as follows: "The operation of or attendance on machinery shall be in charge of a competent shiftsman, and in the Transvaal and Orange Free State Provinces such shiftsman shall be a white man, but unskilled persons working under his directions may be employed on such operation or attendance, provided that the shiftsman exercises effective control." The accused had admitted his responsibility for the carrying out of the regulations, and he was charged with not seeing that the regulations were being carried out, went on the Prosecutor. The haulage was two and three-quarter miles in length and not in a straight line where one could see what was going on. Only one white man was in charge of five trains, and it was thus impossible for him to have effective control over Stephen, who was one of the drivers. Mr. Ford contended that the requirement of the regulation as it stood was that the general charge and operation of machinery should be under a competent shiftsman. But Stephen, he claimed, was not an unskilled driver so as to bring him within the proviso requiring, in that instance, that a shiftsman should exercise effective control. It had been established on evidence that Stephen was a skilled driver. With regard to his second point, Mr. Ford claimed that a class distinction between one Province and another was not such a regulation as was contemplated in Sub-section 2 of Section 4 of which gave the Governor-General power to make different regulations in respect of different Provinces or mining districts of the Union. The operation of Regulation 179 was such that if a person who was recognised as a competent shiftsman in the Cape Province crossed the border and started to do precisely the same work in the Free State he would, according to Regulation 179, immediately become incompetent. His ability nevertheless was

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the same on the one side of the border as it was on the other. For the Governor-General to be able to frame a regulation drawing distinction between white and coloured there should be the distinct provision in the Act which should state: "You shall have the authority to draw a distinction between white and black in the various Provinces." But if that provision did not exist, then the Governor-General was exceeding his powers in making a regulation which made such a distinction. It was a matter of common knowledge, proceeded Mr Ford, that in the coal mines in Natal men were working under much the same conditions as in the Transvaal; but in Natal, where they had an underground tramway similar to that at the Crown Mines, a coloured person could be in charge as a competent shiftsman. But were one to transplant him to the Transvaal he would immediately become incompetent, because he had a black skin and not a white one. On that ground the regulation was manifestly unfair and unreasonable. The magistrate gave the following judgment: "The defence contends firstly that there has been no contravention of Section 179. I do not agree with this, though I am satisfied that Stephen is a capable driver and has been carefully taught his work; he is not a white man as prescribed by the regulation, and therefore not a competent person; there is a shiftsman in charge of the main haulage on the sixteenth level, but I do not consider he can exercise the effective control contemplated by the regulation over so many locomotives and over such an extended area. The second point taken is that the regulations are *ultra vires*. The power to frame the regulations is given to the Governor-General under Section 1, Act 12, 1911. The defence contends that Regulation 179 is unreasonable in that it does not apply to all classes alike or to all Provinces in the Union alike. The Crown argues that it is a special provision for safety made on account of the larger mining operations on the Witwatersrand; that, of course, may be so, but I cannot quite follow why the regulation should apply to the Free State and outside mining districts of the Transvaal, and not to Natal and the Cape Province. There is no evidence before the Court as to the condition of mines and mining generally in any part of the Union. Sub-section 2 of Section 1, Act 12, 1911, provides that 'different regulations may be made in respect of different Provinces or mining districts of the Union.' If the difficulty of the prosecution was the Witwatersrand, why was the regulation not made to apply solely to that area? Surely persons mining in Cape Colony and Natal are entitled to protection under the regulations the same as persons in the Transvaal and Free State? It does not seem to me to be reasonable that a person should be competent in Natal and the Cape Provinces, but that as soon as he crosses the border into the Transvaal or Free State he is incompetent. I do not consider the prosecution has shown any reason for this special distinction in the Transvaal and Free State. The regulation does not apply to all classes alike and I therefore agree with the contention of the defence that the regulation is *ultra vires*." The accused was found not guilty and discharged. It may perhaps be politic not to say too much about this highly important decision at the present moment. The judgment may have such a far-reaching effect that it will be best to await the result of any appeal that may be brought by the Law Agents of the Crown before discussing the matter further. But this much may be ventured at this juncture at any rate, and that is simply this: The action is largely in the nature of a test case, and it is the first probing in a Court of Law into certain artificial regulations by means of which the domains of employment as between Europeans and natives have in the past been determined. A Supreme or Appelate Court may reverse the Johannesburg magistrate's verdict, but it seems to us that in the course of time a still higher Court, determined by the laws of common logic and of industry, unfettered by artificiality and race evolution, will re-establish the fairness of Mr. Bovill's judgment.

Notes & News.

Brakpan Working Costs: A Correction.

We wish to correct a typographical error appearing in our last issue. On page 785, under the heading of "August Output: Group Returns," it was stated that the working costs at Brakpan mines during the month were 22s. 11.8d. per ton milled. This figure should read 20s. 11.8d. per ton milled.

* * *

Crown Diamonds.

The annual meeting of Crown Diamonds was held yesterday, unfortunately too late for a report of the proceedings to appear in this issue. The chairman's review on the whole indicated a satisfactory position of affairs. A full report of the proceedings at the meeting will appear in our next issue.

* * *

Cape Cement and Competition.

Seldom has a good case been better put than that against unfair dumping from overseas by Mr. J. L. Siddall at the annual meeting of the Cape Portland Cement Company this week. Mr. Siddall has taken his shareholders and the public into his confidence, and he has shown how a legitimate local industry has to fight its way against dumping from oversea on the one hand and excessive railway rates on the other. Let us hope that the S.A.R. people will not long delay in removing the anomaly whereby 1s. 5d. per bag is charged for the carriage of cement from De Hoek to Capetown—100 miles—when the overseas article is brought 6,000 miles for 6s. 3d. per bag. What one is tempted to ask is what is our Board of Trade and Industry doing?

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Government Mining Engineer's Report.—I.

A CRITICAL PERIOD OF REFORM AND THE REORGANISATION REFLECTED IN AUTHORITATIVE OFFICIAL REVIEW.

The Annual Report of the Secretary for Mines and Industries and the Government Mining Engineer for the year 1922 was issued this week.

In many respects this is the most important and informative report issued by the Department of Mines and Industries. The period covered includes, of course, the months of strike and settlement of trade dispute by force instead of arbitration, and the logic of ascertained statistics [illegible] of the fallacy of the strike. There are few industries in the world better organised and more efficiently run than is the Rand Gold Mining Industry, and one of the outstanding lessons of modern days is that efficiency of work is consistent with the well-being of the worker. For the last six months of 1922 decisions as to the efficiency and welfare of the workers were left entirely in the hands of the mine management, and the result, as depicted by the statistics in Sir Robert Kotze's report, requires no better illustration.

The bases taken for figures of comparison are 1,000 tons of ore hoisted in Witwatersrand producing mines per working day and the average number of persons at work

	1904	1914	1919	1921.	1922.
Whites	310	212	238	217	180
Coloured	2,240	1,655	1,851	1,883	1,878

Whites ...* 163
Coloured ... 1,772

As annexures to the report Sir Robert quotes extracts from reports of several inspectors of explosives and mines which have a bearing on the above figures. The Brakpan Inspectorate, Transvaal, says in regard to the aftermath of the strike:—

"The effects of the long stoppage due to the strike on the mining industry and the policy of those controlling the industry could not be slight.

"The workmen soon felt the changed conditions when they returned to their various spheres of employment. Financially they were impressed by the fact that the big-cheque days were over. Some refused to face the new arrangements and secured work in other lines, but the bulk of the men gradually settled down to the position. At the end of the year the post-strike conditions were established sufficiently firmly to merit a detailed consideration. The strike was fought on the necessity for reducing working costs to meet the continued fall in the price of gold. It was plain to everybody that this reduction required an increased production at less cost, principally on the mining side.

"Europeans had been given employment on certain underground jobs to a degree never originally anticipated. The firm attitude of the unions on the principle of one man one job had created a large body of so-called workers who were alleged by the Chamber of Mines to be redundant. These men have been eliminated, and it is found that they have never been missed. From the humane point of view safety first has to be considered. It is pleasing to record that, so far, accidents have not increased with the reduction of Europeans employed. In fact, the results for the year in this district are more favourable than in the past. Bearing in mind that many of the redundant men were employed in the support of hanging as waste-packers, etc., the accident figures discussed elsewhere are significant. It would appear that the efficiency of such men must have been somewhat low."

It is obvious that there is a limit to which the reduction of European employees can be carried. The amount of supervision to carry out the work of the mines with the observance of the regulations for safety and health is a question that the Department is naturally interested in. While men must do a reasonable day's work, care must be taken that their task is not overloaded.

The mines have reduced their underground European complements anything up to about twenty per cent., and in many cases the natives in a somewhat lesser proportion, yet the tonnages sent to the mills have been maintained or substantially improved. Taking a moderate survey of the position, it can be stated that a ten per cent. reduction in the underground employees has given a ten per cent. increase in the tonnages. Such an anomalous position needs explanation and the causes are not far to seek.

The principal operation in mining is that of breaking ground. Machine efficiency is a fair guide as to the work being done, for the other classes of underground work must keep pace with the ground broken. During the past years the old heavy reciprocating drill has been steadily replaced by the lighter water-fed hammer drills of the Leyner type. Four holes a shift was the capacity of the reciprocating type, but the actual capabilities of Leyner machines have only been revealed since the strike. Six or seven holes were taken to be their day's work at best. Contracts were based on figures representative of the older type of machine, and the improved drilling capacity of the newer machines only served to add to the financial gain of the contractors. In other words, the mining companies made but little out of the improved appliances they installed for breaking ground. The no-cost contract applied in its varied forms generally has two factors which have enabled the machines to be tested out. The bonuses paid on an increased machine efficiency and on a reduction in explosives used have given the contractors an opportunity of increasing their earnings. It is noticeable that the footage drilled per shift has substantially gone up, and with it the area broken has shown remarkable improvement. The control exercised by the amount of explosives used proves whether or not the holes are placed to advantage. Some mines have improved up to about 50 per cent. on the area broken per machine shift. The accepted six or seven holes per shift has been raised in many instances to ten and twelve holes, and in a few cases to fifteen holes. It is plain that the increase in drilling has in many cases permitted three machines to do the work of four, and so on. By giving better compressed-air pressure for the machines remaining, the advantage can be maintained fairly easily.

Improved Reduction Practice.

The innovations at the Springs Mines reduction plant have now been in operation for some months, and, so far, the results have fulfilled the anticipations of the engineers, who, after searching experiments and investigations, had the courage to spend the money in putting their ideas into actual practice.

In the new portion of the plant the old-fashioned gravity stamps, which have survived from the earliest days of these fields, have been entirely discarded, being replaced by ordinary stone crushers with slight adjustments. The crushed product is fed directly into tube mills, and eventually all reduced to slime, which is cyanided in the usual way, sands treatment being entirely eliminated. The tube mill product is classed in a Dorr classifier, the first of its kind on these fields, which is a marvel of simplicity and efficiency for this special purpose.

As a result of a few months' working, the designers of this plant make the following claims, viz.:—

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* The figures show marked efficiency in the last year. If the calculations are made on the work done during the last half of the year the increased efficiency was even more pronounced.

1. Reduced capital expenditure, which is estimated at 30 to 35 per cent.
2. Reduced working costs, due to elimination of the staffs usually employed on amalgamation and sands treatment. A considerable saving is also effected in pumping the pulp, which, as slime, naturally has less wearing effect on the pump blades. The treatment of slime is also admittedly cheaper than in the case of sands.
3. Increased extraction of gold, due to the greater fineness of the treated slime as compared with equal units of the old plant. The figures in this connection are 78 per cent. under 200 mesh, as against 58 per cent. in the old plant. The extra fineness gives a higher extraction with correspondingly lower residues.
4. Decreased loss of gold through theft, owing to entire absence of amalgam and the comparatively simple manner in which all the vital processes of reduction can be assembled under one roof, with closer supervision.

Improved Shaft Practice.

At Springs Mines the manager and staff, with indulgent consulting engineers, have evolved a shaft equipment which doubtless will be taken as a pattern to succeeding generations. At the main hoisting level, storage bins have been cut at a little distance from the shaft in order to avoid disturbing the strata surrounding it. The bins are capable of holding 1,600 tons of ore and 900 tons of waste. The rock from these bins is delivered to the skips by means of a shaking feeder on to a 36-inch conveyor belt, through a small feeding bin, the motive power being electricity. By these means waste rock cannot find its way into the mill, but is hoisted separately and dumped.

The increased underground storage capacity renders it possible for all rock hoisting to be done on night shift, which results in the equal distribution of the demand on the boiler plant, and consequent elimination of a high peak. The results in this particular departure have shown a marked saving in boiler capital expenditure. The shaft itself has been provided with an 11 ft. compartment, in which timbers can be lowered without the usual difficulty of stacking. Drills are lowered in special numbered trolleys for each stoper, which are loaded in the shops and delivered direct to their users, being returned in the same manner without the usual tedious and expensive handling which is the common practice on most mines.

Ore Concentration.

The practice of abolishing the usual amalgamation procedure on battery and tube mill plates is rapidly spreading. A coarse corduroy cloth is now spread on the tube mill tables which effects a concentration of the heavier particles in the pulp, which are washed out in launders every two hours. These concentrates are subsequently further concentrated on Wilfley tables, and the final product caught in amalgamating barrels or other similar contrivances. At one large mine in the district where this practice has been recently adopted the residues have been brought down by 0.04 dwt. per ton, a very considerable saving over a large tonnage. It is further claimed for this practice that the chances of theft of gold are considerably minimised. Special arrangements are also made on this mine for recovering platinum iridium, the recovery being close on 20 ounces per month.

Black Reef.

At the Modderfontein Deep Levels a body of Black Reef lying practically on the surface has been opened up and is being stacked for crushing when required. It is estimated that there will be several hundred thousand tons of payable ore available, portions of which are abnormally rich in gold.

The importance of mining, particularly the Gold Mining Industry, to the country is so often overlooked that the totals of mineral production ought to be continually borne in mind. Sir Robert gives in his report an analysis of the total mineral output from the date of earliest records to 31st December, 1922. These figures are of general interest and are reproduced here in full.—

MINERAL PRODUCTION.

Value of output of minerals from earliest date of existing records to 31st December, 1922:—

Mineral	Transvaal. £	Cape. £	Orange Free State £	Natal £	Union of South Africa £
Gold ...	749,234,347	21,886	—	84,210	*749,340,443
Silver ...	2,685,013	2	—	137	2,685,152
Osmiridium	19,966	—	—	—	19,966
Diamonds	31,426,595	170,893,131	19,847,493	—	222,167,219
Coal ...	29,515,558	1,999,682	3,267,318	22,556,794	57,339,352
Copper ...	3,206,159	19,756,078	—	389	22,962,626
Tin	4,572,825	61,019	—	—	4,633,844
Antimony	33,279	—	—	—	33,279
Arsenic ...	3,302	—	—	—	3,302
Bismuth ...	300	—	—	—	300
Chrome Ore	508	—	—	—	508
Iron Ore ...	5,478	229	—	496	6,203
Lead	218,308	—	—	—	218,308
Manganese	4,402	179	—	549	5,130
Mercury ...	5	—	—	—	5
Nickel	38	—	—	—	38
Tungsten	5,529	620	—	—	6,149
Zinc ...	50,988	—	—	—	50,988
Asbestos	190,813	639,467	—	1,709	834,989
Corundum	66,134	1,521	—	10	67,665
Graphite ...	21,990	—	—	300	22,290
Iron Pyrite	14,709	968	—	—	15,677
Kaolin	—	—	—	104	104
Magnesite	34,756	—	—	—	34,756
Mica ...	6,837	—	—	—	6,837
Mineral Paints ...	1,510	166	—	3,507	5,183
Soda ...	100,832	—	—	—	100,832
Talc	11,172	—	—	33	11,205
Totals	821,461,353	193,374,948	23,114,811	22,651,238	1,060,602,350

* Total value includes gold premium, amounting to £25,966,922, accrued since 24th July, 1919.

To be continued

Rhodesian Dividends.

In answer to the allegations of the Labour Party in Rhodesia the "Bulawayo Chronicle" has been analysing returns on capital invested, and in the course of an editorial comments: Following upon our reference yesterday to the continued dissemination of a somewhat ignorant assumption that all dividends are necessarily "huge," we have received a request for further information on the subject. According to the annual report of the Rhodesian Chamber of Mines for the past year, the total of dividends declared by Rhodesian mining companies during 1922 was £611,639. It will be seen from the list that this total was made up by a few large dividends and a number of moderate ones, while there is no special record of those companies which paid no dividend at all. To get an exact idea of what these dividend payments represent in the shape of average profit it would be necessary to know what amount of capital has been sunk in the Rhodesian mining industry. So far as we are aware, no precise calculation of this sum has been attempted, or is possible. It has been suggested, however, that a very moderate estimate would show something over £10,000,000 invested in Rhodesian mines, and that if all the capital expenditure upon small and individual enterprises could be included the total would be distinctly above that figure. If, however, we adopt £10,000,000 as a low but convenient basis, it will be seen that last year's dividends represent an average return of about 6·1 per cent. This is curiously similar to the calculation of Professor Lehfeldt, Professor of Economics at the Witwatersrand University, who, with the assistance of officials of the Union Mines Department, arrived at the conclusion that the profit yielded by the mines of the Witwatersrand during the fifteen years ended with December, 1921, showed an average return of 6·2 per cent. per annum. It is, however, practically certain that the average Rand profits are higher than the Rhodesian, for in the case of the great Transvaal gold field we have large and rich deposits of ore concentrated upon one line of reef, whereas the Rhodesian mines are of an entirely different character, consisting for the most part of smaller veins scattered at random over a huge area of country and therefore more costly and uncertain in the working.

Tete Coalfields.

The possibility of Beira becoming a coal port in competition with Lourenço Marques and Durban is discussed in the "Times Trade Supplement" by M. A. E. Gerard, managing director of the Societe Miniere et Geologique du Zambesi.

M. Gerrard points out that large-scale development of the coalfields is dependent on the construction of a railway to connect them with the Beira-Nyasaland trunk route, as river transport will not permit more than 30,000 tons to 40,000 per annum to be delivered at the Murraca railhead of the Trans-Zambesia line. On the other hand, as soon as the railway to the coalfields has been built (the route from Chiromo to Benga as surveyed is 115 miles) an annual output of 300,000 tons may easily be reached and will find a market chiefly at Beira. M. Gerard points out that the export of Natal coal from Durban is 700,000 tons per annum and of Transvaal coal from Lourenço Marques 400,000 tons. Beira's geographical position is better than either of these ports. The distance from the Tete coalfields to the coast is rather more than from the coalfields in Natal and the Transvaal, but the gradients on the Tete-Beira route are very much easier, and the coal is quite as good as the South African coal. Also, it may be expected that the port of Beira will shortly be put into a fit state to deal with a large tonnage. Assuming that the coal will go by the line coalfields-Chiromo-Beira (about 375 miles), and that the output is 300,000 tons, it would probably mean that there would be a reduction possibly of two to three pence per ton per mile on the average actual tariff of the railways concerned. On the 9,000 tons of actual traffic in Nyasaland it would mean a saving of £30,000 annually. When the railway is extended to Lake Nyasa, with the consequent development of the northern districts of the Protectorate, the 9,000 tons would probably be increased to 15,000 tons. The reduction on the freight due to the coal traffic would then mean a saving of £50,000. This increased traffic due to the coal will make the railway a paying proposition. As the Nyasaland Government has guaranteed the interest at 6 per cent. for 25 years on the £1,200,000 debentures of the Trans-Zambesia Railway, a probable further saving of £50,000 per annum to the Nyasaland Protectorate would result. The saving of £100,000 per annum would enable the Government to guarantee a further £1,800,000 for railway development.

Rhodesian Mining Notes & News.

REDUCED RATES FOR MICA.

As from September 1 the Beira and Mashonaland and Rhodesia Railways have granted the following reduced scale of charges for mica traffic when the mineral is consigned to Beira for export overseas:—£25 per ton in value, minimum 10 tons Sinoia to Beira, 19s. 2d. per ton S. to S.O.R. £50 per ton in value, Sinoia to Beira, 1s. 11d. per 100 lbs., minimum 50 lbs. £100 per ton in value, Sinoia to Beira, 2s. 11d. per 100 lbs., minimum 50 lbs. £200 per ton in value, Sinoia to Beira, 5s. 3d. per 100 lbs., minimum 50 lbs. Over £200 per ton in value, Sinoia to Beira, 12s. 4d. per 100 lbs.

CHAMBER OF MINES REPORT.

We have received copies of the 28th annual report (for the year 1922) of the Rhodesia Chamber of Mines (printed and published by the Argus Company, Bulawayo). It contains the new rules and regulations, lists of members and officials, and the report of the Executive Committee as presented at the annual general meeting on March 28 last, together with the proceedings at that meeting, including the Presidential address (delivered by Mr. J. G. McDonald, in the absence of Sir Bourchier Wrey), financial statements, etc. Appendices give the report of the Rhodesian Labour Bureau, returns of mineral production, native labour supply, mining revenue, dividends, etc.

NEW PATENTS.

List of new patents of interest to mining men (supplied by D. M. Kisch & Co., Patent Agents, Johannesburg):—

820. Gilbert Probart, Glenharry, in the District of Graaff-Reinet, Cape Province.—A chemical mixture for the destruction of prickly pear by incision and introduction into the leaf. P. 21/8/23.

829. Harry August Stockman, care of P.O. Box 3146, Johannesburg, Transvaal.—Improvements in tipping trucks and the like. P. 29/8/23.

835. Sven John Nordstrom, and The Merrill Company, both of 121 Second Street, San Francisco, California, U.S.A.—Improvements in valves. C. 29/8/23.

836. Charles Albert Griffits, care of P.O. Box 3146, Johannesburg.—Improvements in apparatus for distilling carbonaceous materials. P. 30/8/23.

839. Liquid Oxygen Explosives, Limited, 1 Albemarle Street, London, W. 1, England.—Improvements in or relating to explosive cartridges. C. 29/8/23.

Would Mr. Tom Ross, or his partner, Mr. Blair, mining engineers, communicate with this office regarding an urgent message from Toronto?

Electrical Plants in Southern Rhodesia.—IV.

By H. W. Geare, A.M.I.E.E.

Lonely Reef Gold Mining Co., Ltd.

Owing to its distance from the railway and the difficulty and expense of transporting coal or wood fuel, some two years ago this mine installed a suction-gas plant to replace the original steam-driven plant. The new plant has proved a great success, and has resulted in a big reduction in working costs. The plant consists of the following: Four Crossley wood fuel suction gas plants, each 350 H.P. normal capacity with an overload capacity of 450 H.P.; four Premier multi-cylinder horizontal gas engines. Three of these engines are of the four-cylinder type direct coupled to three 3-phase alternators, each 250 K.V.A. capacity at 0·8 P.F. and 525 volts 50 cycles (187·5 R.P.M.), and the fourth engine has three cylinders and is direct coupled through a flexible coupling to an air compressor, capacity 1,500 cubic feet per minute. The power log for May, 1923, discloses the cost per K.W.H. to be 0·63d. and the total cost of power per ton milled, including compressor, 3s. 9·2d.

The Lonely Reef Gold Mining Co., Ltd., power log for May 1923:—

Tons Milled	5,565

Power Costs

	£	s.	d.
White Labour	82	18	10
Native Labour	58	9	1
Compound Expenses ...	12	0	0
Stores	125	19	3
Fuel 708 Cords at 15	531	0	0
Maintenance	108	12	0
Pumping and Power ..	100	0	0
Total Costs	1,048	19	2

	K.W. Hours	314,140
Compressor ... 8,338,000	Revs. = K.W. Hours	83,380
	Total—K.W. Hours	397,520
	Cost per K.W. Hour	0·63d.

Distribution.

	Meter Reading K.W.H.	K.W. Hours per ton	£	s.	d.
1. General Surface	31,779	5·7105	83	11	11
2. Cyanide Works .	13,869	2·4922	36	9	8
3. Tube Mills	121,290	21·7951	319	1	4
4. Bellis Compressor .	18,380	3·3027	48	7	0
5. Mill	53,320	9·5813	140	5	4
6. Underground	34,396	6·1808	90	9	8
7. Hoists	12,336	7·6076	111	7	5
Total	315,370	56·6702	829	12	4

Total Output Reading 314,140 I.R. Compressor 219 6 10

Difference per cent minus 0·389

Cost Power per ton, excluding I.R. Compressor	2 11·8
Cost Power per ton I.R. Compressor .	9·4
Total Cost Power per ton milled . .	3 9·2

Remarks.—Producers running 1st to 8th, Nos. 1, 2 and 4. Producers running 9th to 31st, Nos. 2, 3 and 4. No. 1 Producer knocked off on account of bad gas while experimenting burning soft wood. All producers now burning soft wood only. Engines Nos. 1, 2 and 3 opened up, examined and cleaned. Pistons on Nos. 2, 3 and 4 Cylinders on No. 2 Engine and Nos. 1, 2, 3 and 4 No. 3 Engine, drawn and cleaned. 5 new piston rings fitted.

Conclusion.

Great activity has been manifest in the mining industry of both Northern and Southern Rhodesia during recent months. Several new mines are shortly opening up, and at least one large hydro-electric power plant, that will eclipse in size anything now working in Rhodesia, is under consideration. For information contained in this paper my thanks are due to Messrs. J. G. McDonald and J. Hynd, of the Gold Fields Rhodesian Development Co., Ltd., H. T. Brett, of the Falcon Mines, Ltd., F. T. Bowring, of Shamva Mines, Ltd., and the Managers of Rezende Mines, Ltd., Cam & Motor G.M. Co., Ltd., Wankie Colliery Co., Ltd., Globe & Phœnix G.M. Co., Ltd.; also Bulawayo Waterworks Co., the Rhodesia Railways, C. H. Baskerville, of Salisbury Municipality, and R. Laurie, for some of his photographs and lantern slides.

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Electrical Plants in Southern Rhodesia.—(*Continued*)

Table No. 1.

Name of Plant.	Type of Prime-mover	Total capacity of generators in K.W.	Voltage.	Number of phases.	Frequency
Shamva Mines, Ltd.	Parsons Turbines	3,750	2,200	3	50
Falcon Mines, Ltd.	Do.	2,500	550	3	50
Cam & Motor G.M. Co., Ltd.	Willans & Robinson and Sankey turbines. Robey Cross Compound engines	1,800	550	3	50
Rezende Mines, Ltd.	Pelton Wheels	1,400 200	440 2,200	3 2	50 53
Wankie Colliery Co., Ltd.	Bellis-Morcom engines	1,118	550	3	50
Globe & Phoenix G.M. Co., Ltd.	Do.	1,100	580	3	60
Lonely Mine G.M. Co.	Suction-gas engines	600	525	3	50
Arcturus Slate Mine	Bellis-Morcom engines	800	550	3	50
Rhodesia Railway Workshops	Bellis-Morcom & Allen engines	800	550	3	50
Bulawayo Waterworks Co.	Bellis-morcom engines	781	P. 2,300 S. 200,115	3	50
Salisbury Municipality	Browett Lindley Producer gas (New Plant)	600	P. 2,000	3	50

Table No. 2.

Shamva Mines, Ltd.

Total units generated per annum	17,000,000
Lbs. of coal per K.W.H.	2·18
Lbs. of steam per K.W.H.	16·5
Cost per K.W.H. (excluding redemption) ...	0·6d.
Cost of coal per ton	39s. 8d.
Average vacuum maintained . . .	25·5"
Average barometer	25·5"
Steam pressure	175 lb.
Average power factor . . .	0·77

Table No. 3.

Falcon Mines, Ltd.

Turbo-generators: total units generated for year 1922	7,530,049
Equivalent blower and compressor units .	6,311,183
Average coal consumption per unit .	2·88 lb.
Average steam consumption per unit ...	17·87 lb.
Average cost (excluding redemption) ...	0·6956d.
Average vacuum maintained	23·52"
Barometer (4,600 ft. above sea level)	25·5"
Cost of coal per ton	28s. 6d.

Table No. 4.

Falcon Mines, Ltd.

Nissen Stamps.

Number of stamps running .	28
Tonnage milled for 12 months	179,550
Total units used	926,577
Units per ton crushed . . .	5·16
Cost of power per ton crushed . . .	3·82d.
Total cost per ton crushed . .	1s. 2d.
Weight of stamps	2,000 lb.
No. of drops per minute	98
Approximate height of drop	10"
Screening used	½" mesh.
Duty per stamp per 24 hours	19·03 tons.

Table No. 5.

Cam and Motor G.M. Co., Ltd.

Total units generated per annum	7,800,000
Total equivlenat air units per annum	4,200,000
Lbs. of coal per K.W.H.	Approx. 3·5
Steam pressure	160 lb.
Steam temperature (superheated)	600°F.

The New State Areas Dispute.

The position in regard to the dispute at the New State Areas over the question of mine contractors' pay has not improved since last week. The Minister of Mines has consented to receive a deputation representing the men next week, and the whole matter will doubtless then be thoroughly threshed out. It is said that the executive of the Mine Workers' Union has endorsed the actions of the New State Areas men up to the present, and that support is being widely sought in view of the possibility of the trouble resulting in a strike.

ANSWERS TO CORRESPONDENTS.

J. P. B. (Livingstone).—We fear the shares in question are valueless.

RAND STRATIGRAPHY
TAUGHT IN SIX DAYS IN THE FIELD
SOUTH AFRICAN GEOLOGY IN A MONTH
APPLY BY LETTER :—
P.O. Box 1112, JOHANNESBURG.
SCOTT ALEXANDER, Rand Stratigraphist

The Week in the Sharemarket.

HOLIDAYS AND LONDON DELIVERIES DAMP ACTIVITY—PRICES HARDENING—BUSINESS EXPANDING.

The sequence of business in the market has been rather broken by the Jewish holidays, and dealings have been inclined to ease off a little in consequence. Considerable quantities of shares have arrived from London for absorption here, and the process tended to take the sting out of the market for a day. It is evident, however, that all of this stock has been easily taken up and it is probable that the quantity to come will not cause any difficulty. At the moment prices are inclined to harden under a little enquiry and it is evident that business is ready to revive. Without reference to the stocks of any particular group, the following points of interest have become evident. Crown Mines have been bought, and as the profits are expected to be now on a better level, it is likely that the price will advance. Nourse Mines may also be looked to for a forward movement owing to economies on the property and better tonnage. Sub Nigels are a market tip, and as the development has recently been very good there is perhaps reason for optimism. The development at Sub Nigel is approaching Spaarwater, belonging to the Lace Proprietary Mines, and it is said that something will be done with that property shortly. The shares have advanced and may go still better. The company has considerable cash in hand and only a small amount of the capital has been issued. Brakpans, after being well bought, declined slightly owing to absorption of London stock. The progressive returns from this mine leave plenty of reason for optimism regarding the future of the stock. Robinson Deep "B" shares have again been a feature and the stock has become scarce. Randfonteins have been a steady market, and it seems people are beginning to realise that as the profits are likely to improve in the near future the shares will probably rise in sympathy. Durban Deeps and Geldenhuis Deeps are both supposed to have a rise in them. The diamond market has been very dull, and Consolidated Diamonds fell away. Crown Diamonds remain stationary pending the meeting. West Ends were supported. The usual quiet business took place in investment stocks. Some enquiry developed for bank shares, Nationals, Standards and Reserve Banks all having buyers. Robinson Deep debentures were wanted at £104. Apart from the holiday slackness, the tone of the market has been healthy. Business is inclined to expand. The movement, although gradual, may be sustained, and encouraged by the sound condition of the industry it is probable that London will be attracted to the South African market. In this connection it is pleasing to note that several of our leading shares have considerable possible rises in them, improvements which will be justified by results leading to prices being maintained on a higher level.

	Fri. 7th.	Sat 8th	Mon. 10th.	Wed 12th	Thur 13th.
Anglo-Am. Corp.	25 6	25 0*	25 9	25 4½	24 5
Apex Mines	5 6*	—	5 6*	5 6*	—
Aurora Wests	6 3*	6 0*	6 3*	6 3*	
Brakpan Mines	67 9	68 3	68 6*	—	67 9†
Brick and Potteries	4 0*	4 0*	4 0*	4 0*	4 0*
British South Africa	13 6*			—	—
Bushveld Tins	—		0 3*	0 4*	0 4*
Cinderella Cons.	0 7*	—		—	
City and Suburbans	—	2 9*	2 9*	—	
City Deeps	57 3	57 3	56 9	57 0	56 6
Clydesdale Collieries	17 3†	17 3†	17 3†	17 3†	17 3†
Con. Diamonds	19 9	20 0	—	19 6	15 6
Con Investments	—	28 6	—	—	—
Con. Main Reef	9 6	9 6*	9 6*	9 6	9 [illegible]
Coronation Freeholds	—	0 7	0 8*	—	
Coronation Syndicate	0 9*	0 7*	0 8*	0 6*	0 7
Crown Diamonds	6 6	6 6*	6 6*	6 4*	6 4*
Crown Mines	62 6	62 [illegible]	63 6	63 9	63 6
Daggafontein Mines	2 0*	2 0	2 0*	2 0*	2 0*
Durban Roodepoort Deeps	16 0	16 0*	17 0	17 0	16 9*
East Rand Coals	1 0	1 0*	1 0	1 0*	1 0*
East Rand Deeps	0 7	—	—	—	0 7
East Rand Props	6 4	6 6	6 6	6 9	6 6*
Eastern Gold	0 4*	0 4	—		0 4
Ferreira Deeps	6 0*	—	—	6 0	6 0*
Frank Smith Diamonds	3 0*	3 0*	3 4*	3 4*	3 0
Geduld Props.	61 6	61 3	61 6	62 0*	63 0*
Geldenhuis Deeps	—	4 6*	4 6*	4 0*	—
Glynn's Lydenburgs	15 0†			15 0*	15 0*
Government Areas	116 0	115 6	115 6*	116 6	116 0*
Hume Pipes	8 0†	8 0†	—	8 0†	8 0†
Lace Props.	8 0	8 6*	9 0*	9 0*	10 0
Langlaagte Estates	24 3	24 0	22 6*	23 10½	23 10½
Leeuwpoort Tins	4 6*	4 7*	5 2	5 5	5 0
Luipaardsvlei Estate		3 9			3 9*
Lydenburg Farms	2 9	2 6	2 6*		
Middelvlei Estates	1 0*	1 0	—	1 0*	1 0*
Modder B's	24 4½	24 3	24 6	23 9*	23 9*
Modder Deeps	40 0	40 3	40 0*	40 6	40 1
Modder Easts	5 0*	5 0*	5 5	5 6	5 3*
Natal Navigation Collieries	28 0*	28 3*	28 3*	28 0*	28 0
National Banks	120 0*	120 0*	120 0*	120 0*	120 0*
New Eland Diamonds	37 0*	36 0*		35 6*	36 0
New Era Cons.	7 3*	7 6*	7 0	7 9*	7 6*
New Geduld Deeps	0 6*	0 6	0 6*	0 6	0 6*
New Kleinfonteins	4 9*	5 1*	5 0*	5 1½	5 0
New Modderfonteins	83 0*	83 0*	83 0*	83 0	83 0
New State Mines	33 0	32 0*	32 0*	33 0†	31 9
Nigels	6 0*	6 0*		6 0	—
Nourse Mines	14 9	14 4*	14 6*	14 7*	14 6*
Pretoria Cements	37 6*	37 6	36 6*	37 6	37 3
Rand Collieries	0 4*	0 6*	0 6*	—	—
Rand Mines	52 0*	52 0*	52 0*	52 4*	52 6*
Rand Nucleus	1 1	1 1*	—	1 2*	1 1*
Randfontein Centrals	13 1*	13 6*	13 0*	13 6*	
Randfontein Estates	21 9	21 9	21 9	21 9	21 7½
Roberts Victors	6 0*	6 0*	6 0*	6 4*	6 0*
Robinson Deep "A"	33 9	33 3*	33 0*	33 0*	33 0*
Robinson Deep "B"	16 4½	16 6	16 9	15 10½	16 9
Rooibergs	3 3*	3 6*	3 6*	3 9†	3 0*
Ryan Nigels	4 0†	4 0†	—	4 0†	4 0†
Shebas	2 0*				
Simmer and Jacks	2 8*	2 9*	2 8*	2 8*	2 8*
S.A. Lands	3 3*		3 6*	3 6*	3 6
S.A. Reserve Bank	£133*	£136†	£13[illegible]*	£13[illegible]*	£137*
Springs Mines	50 9	50 6	51 0	50 9	50 3*
Sub Nigels	11 9	12 0	12 0	12 0	11 6*
S.A. Alkali	9 6	9 3*	9 0*	9 0*	
S.A. Townships	11 3	11 4*	11 3*	—	12 0†
Transvaal Lands	17 6*	17 3*	17 6*	15 0*	14 3*
Transvaal G.M. Estates	10 6*	10 9*	10 6*	10 10½	11 0
Transvaal Silvers	13 6*	13 0	14 9	14 6*	14 9
Tudors			0 6†		—
Union 5 per cent.	£101½*	£101½*	£101½*	£101½*	£101½*
Van Dyks	0 9*	0 9*	0 9*	0 9*	0 9*
Van Ryn Deep	64 9	65 0*	65 6	64 6*	65 3†
Van Ryn Estates	14 0*	14 3*	14 3*	14 3*	14 0*
Village Deeps	12 6	13 3	—	13 3*	13 0*
West Springs	22 1	22 6	21 1*	22 1	22 0
West Rand Cons					4 6*
Western Rand Estates	2 1*	2 1*	2 1*	2 1*	2 1*
Witbank Collieries	30 6*	30 3	30 6*	30 3*	30 3*
Witwatersrands		14 0*	14 6*	14 0*	14 6*
Witwatersrand Deeps	15 3	14 9	14 6	14 6*	14 6*
Zaaiplaats Tins	5 6*	5 7*	6 0	6 1	6 0

* Buyers. † Sellers.

ANSWERS TO CORRESPONDENTS.

Enquiries regarding stocks and shares will in future be handed to our Stock Exchange correspondent, who will either reply through the medium of this Journal, or where the matter calls for special treatment will answer correspondents direct. In dealing with a number of different stocks an index number should be given to each stock and a copy of the letter retained by the person making the enquiry.

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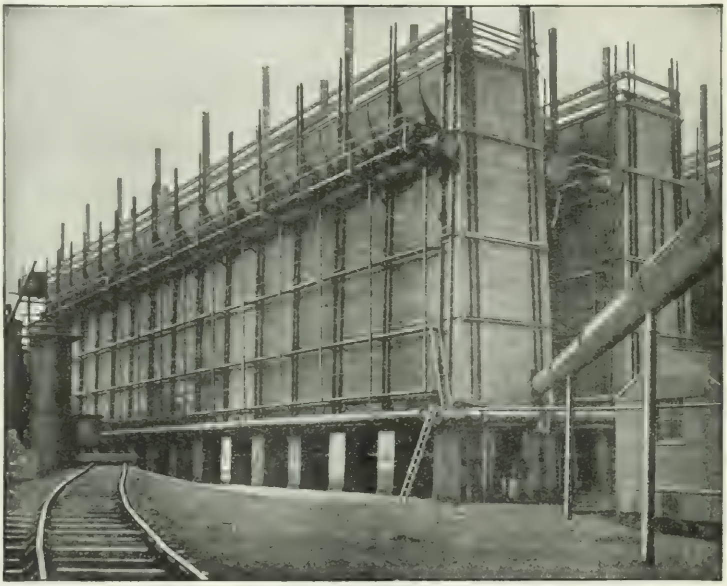

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INDUSTRIES SECTION.

Pumps and Refrigerators.

LOCAL INDUSTRIES No. 3: MESSRS. CHRISTOPHER & SHILLITO: AN ENGINEERING FIRM THAT IS WIDENING ITS SCOPE—MINE PUMPS AND SPARES—LOCALLY-MADE DISINTEGRATOR—BIG PROSPECTS FOR REFRIGERATOR PLANTS.

General engineering is one of the industries that has felt somewhat severely the effects of the prolonged depression, and is indeed only now emerging from the black clouds that have enveloped it. Some of the more far-seeing firms have for some time past realised that entire dependance upon the gold mining industry, invaluable as this has been in the past, is a doubtful policy in these days of price-cutting and stringent economies, and they have wisely directed attention to possible avenues for extending their sphere of operations. The difficulty has, of course, been to discover profitable openings and to anticipate the lines of possible development in this country in which the competition of old-established overseas firms, with capacity for large and cheap output, could be faced with some degree of confidence.

An Unexplored Field.

One apparently very promising field for exploitation would seem to be in the manufacture of refrigerating plant. Both for the internal trade and in view of the possible development of the export trade in the perishable products of the country there must be an increasing demand for refrigerating plant. Hitherto this demand has been largely met from overseas, though a Capetown firm has met with a very encouraging measure of success in its efforts to capture a share of this business. So far as Johannesburg is concerned, however, the field appears to have been neglected, and it is gratifying, therefore, to find that one firm at any rate is making an enterprising attempt to remove this reproach. Messrs. Christopher & Shillito, Ltd., of New Doornfontein, have for the last three years been specialising on the manufacture of refrigerator plant, and although the market in this department has in common with all others suffered from the prevailing depression, there are indications that an improvement will not be much longer deferred.

Although the installation of a refrigerating plant is not an economical or a practicable proposition for the ordinary farmer, it should prove a very paying investment when run on co-operative lines, and efforts have been arranged to interest the producers in such a project especially in the Western Transvaal. So far the general financial situation has prevented any definite response, but developments in that district are inevitable, and it was satisfactory to find on a recent visit to the well-laid-out works of Messrs. Christopher & Shillito that this firm is planning for a considerable extension of its production in this direction.

Mr. H. Shillito, who has now a controlling interest in this concern, which has been established since 1905 (formerly known as the Knight Engineering Company), told the Special Commissioner of "The S.A. Mining and Engineering Journal" that it is intended to specialise on plants having a refrigeration capacity of 30, 80 and 160 tons per 24 hours. The refrigerator is of the double acting type—compressing from both ends of the cylinder—with a 28 in. stroke and 14 in. bore. The firm is placing on the market a new type of valve which is designed to give a faster inlet and freer access of the ammonia gases. The plant is designed for either steam or electric drive. It is run at slow speeds—60 to 65 r.p.m. in the larger types and 80 to 85 r.p.m. in the 30-ton compressor.

In price and design Mr. Shillito is confident that his firm can compete against the imported plant. Already they have made plants for both the export market and the inland centres. In Johannesburg Messrs. Piel's cold storage is equipped with Messrs. Christopher & Shillito's installation, and they have also supplied plant for Durban and Benoni.

Other Specialities.

Although this latest development of the works is of interest as indicating an enterprising resourcefulness to cater for a comparatively new department of engineering, other lines are by no means neglected. A very useful line of low-lift pumps is now made locally, and pumping plant and spares have for long been supplied. Another speciality, the Daly stem-guide, is now installed on something like 50 per cent. of the batteries on the Reef. A Fuller mill for the Pretoria Portland Cement Company has just been completed, and a very serviceable-looking disintegrator is made of varying capacity and varying fineness of grain according to the class of material to be ground. This has been manufactured at New Doornfontein for the last four years.

These works cover four acres and provide employment for about 60 whites and 80 natives. There are 22 employees engaged in the foundry alone, and there is also a well-equipped machine shop, blacksmith's shop, pattern shop and seel construction department. A noticeable feature of the plant is a Ryerson's high-speed friction saw, run by a 52 horse-power motor and capable of cutting a 12 x 6 joist in half a minute. The works has its own compound.

It was interesting to learn from Mr. Shillito that inquiries in respect to general engineering work are now excellent and that business in steel work in particular has of late shown very satisfactory signs of development.

CONCRETE LINED PIPES.

New Process Being Applied in Johannesburg.

It is interesting to learn that the principle on which the reinforced concrete pipes, described in last week's "Mining and Engineering Journal," are made, is now applied to the lining of the ordinary steel or iron pipe. A mixture of Portland cement, sand and water is applied by centrifugal force to the interior of the pipe. A degree of consolidation is obtained by increasing the speed at which the pipe is rotated, and an evenness of deposit is obtained—to any required thickness, which not only increases the strength of the pipe to a considerable extent but effectually resists all corrosion or percolation. The lining adheres very strongly to the walls of the pipe and does not separate even when subjected to very varying changes of temperature.

One of the outstanding features of this process is that any diameter pipe can be lined with concrete at a comparatively low cost. Pipes lined with concrete under this process possess the advantage that greater rigidity and strength is given to the pipe; corrosion and the action of acid in the water is entirely prevented, and incrustation and growths do not occur. The co-efficient of friction in a pipe lined with concrete is greately reduced owing to to the highly polished surface obtained under this process.

It follows, therefore, that the water mains retain their full bore and full delivering power indefinitely, and the factor of safety as to volume of delivery usually allowed by engineers need not be taken into account, so that if a steel or iron pipe of 10 in. diameter is required, the same diameter pipe lined with a ½ in. liner will have the same delivery even though the diameter is reduced to 9 in. The manufacturers of this patent process in England have lined pipes up to 62 in. in diameter for municipal water services in Birmingham, Leeds, Cardiff, Manchester, Cowie Harbour Board, Borneo, etc., and for numerous other purposes and concerns.

The Hume Pipe Company (S.A.), Ltd., have entered into an arrangement with the Cross Pipe Lining Company, Ltd., to manufacture in this country. Mr. I. Chapman Gibson, of 15 Commercial Exchange Buildings, Main Street, Johannesburg, has been appointed the sole South African agent. The [illegible] that has been executed on behalf of the mines have been highly commended upon by the engineers concerned. In one test an old 10-in. diameter pipe with many holes lined with a ½-in. liner withstood a test of over 200 lbs. pressure per square inch.

Mr. R. H. Stewart, Inspecting Engineer to the Crown Agents for the Colonies, the Lords Commissioners of the Admiralty and the High Commissioner of South Africa, has reported very favourably on the process, which he regards as "of high value and great usefulness, very easy of application and low in cost of production."

MINE TIMBER FROM THE ZEERUST DISTRICT.

The Zeerust correspondent of "The Star" reports that considerable quantities of mining timber are now being sent from the Zeerust district to the Witwatersrand. As a matter of fact, mining poles from the Zeerust and other districts of the Transvaal, as well as from other parts of South Africa, and particularly the Greytown district of Natal, are constantly arriving on the Witwatersrand. The requirements of the mines in respect of mining poles mean an expenditure, among the timber growers of the Union, of about half a million pounds per annum. To give an instance of the timber consumption of one group only, it can be stated that last month no less than 400 large trucks, each of 26 tons, were purchased from South African timber growers. In 1922, when the operations of gold mines were restricted on account of the strike, the value of mining poles purchased by the Witwatersrand mines was £448,969. In 1921 the value was £529,549. The value of the total consumption of mining poles by all mines in the Union during 1922 was £488,746, and all but £2,600 of this was South African produce.

DEPENDENCE OF FARMERS ON THE MINING INDUSTRY.

In the course of his report on the Pretoria Mining Inspectorate during the year 1922 Major T. G. Trevor, the Government Inspector of the Mines of this district, makes some interesting remarks on the general depression prevailing in his inspectorate. He goes on to express the opinion that the lack of expansion in the mining industry has been principally the cause of depression amongst agriculturalists, and in the course of his report remarks as follows: "For the past thirty years the mining industry has been the one consuming industry in the Union, and the prices of all farm products have been based on the consumption of the mines. While the production of the farms was limited to those requirements, prices were high and farmers prosperous. In the past twenty years, thousands of new farms have been given out, tens of thousands of acres of new land have been broken, and live stock has multiplied many times; but in the meantime no new mineral fields have been thrown open and the consumption of the mines has remained practically stationary, nor has the industrial development of the country as a whole kept pace with its real requirements."

The Next S.A.R. Electrification Scheme.

Pressure is being brought to bear on the Minister of Railways to make a start with the recommendations of Messrs. Merz & McLellan in regard to the electrification of the Capetown-Simonstown line. The Capetown papers have had leaders on the subject in recent issues; they certainly seem to make out a good case for early action on the part of the authorities. As one writer very reasonably puts it, the Minister of Railways was convinced last session that it is not a reasonable argument to urge, as has sometimes been urged, that the Cape electrification scheme should be postponed pending the results of the Natal "experiment." In the matter of electrification for the purpose of suburban passenger traffic there is, of course, no need to await the results of the electrification of a line which is intended mainly for goods traffic. There is abundant evidence from all over the world to justify the belief that when our suburban lines are run by electricity they will show an extremely handsome profit on the outlay. Quite recently, for instance, the Victorian Railway Commissioners, in reporting on the advantages reaped from the partial electrification of the Melbourne suburban services, which correspond very closely in many of their features with the conditions ruling in the Cape Peninsula, drew attention to the marked increase in business which had followed.

Similar encomiums on the value of electrification in suburban passenger development might be quoted from reports from all over the world, but we can hardly doubt that Mr. Jagger is well aware of the evidence and fully realises the importance of pushing the work ahead as soon as possible. The limiting considerations are, of course, financial. A large railway programme is already in course of construction, but it is well to remember that some at least of the lines which are now being built, though they open up fresh country, are lines which cannot be expected to bring any return for many years to come. It is absolutely certain that the electrification of the Peninsula suburban lines will immediately yield a return of fully 10 per cent on the capital outlay. They certainly seem to make out a good case for early action on the part of the authorities.

The Standard Oil Company has favoured us with an order for the forthcoming edition of the "S.A. Mining and Engineering Journal" Year Book.

The Short Ton.

A correspondent of a London contemporary writes:—"Has not the time come to abolish the misleading 'short ton' of 2,000 lbs? In considering mine returns, one never knows where one is. Every schoolboy knows that a ton proper consists of 2,240 lbs. Why was this changed? Whereas, in the old days, we always knew where we were, now mining returns are impossible of comprehension to the statistical enthusiast. It is just as if someone came along and told us that there were only nineteen shillings in the sovereign. The short 'ton' is not honest. As the Scripture says—'twenty gerahs shall be the shekel.' (Leviticus xxvii. 25.) There was nothing dishonest in the law of Moses, and there should be nothing equivocal in the law of modern weights and measures." There is force in our correspondent's argument. Perhaps the great technical societies (e.g., the Institution of Mining and Metallurgy) will take the lead in seeking to abolish the short 'ton.'"

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ANTIFRICTION METAL
"FLOWER" BRAND

MAGNOLIA ANTIFRICTION METAL

HAS THE LOWEST CO-EFFICIENT OF FRICTION.

KEEPS down the bill for lubricants, making **BEARINGS** smooth as glass and keeping them **COOL** under heaviest pressures and highest speeds.

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TRADE SECTION.

Week in the Mining Material and Engineering Trades.

EUROPEAN EVENTS OVERSHADOWING BUSINESS—IRON AND STEEL CONDITIONS IN UNION AND OVERSEAS—SATISFACTORY INCREASE IN RAILWAY EARNINGS—LATEST METAL QUOTATIONS.

General.

The week under review, interrupted as it was by the Jewish holidays, has been an exceedingly quiet one so far as general business was concerned. It is on occasions like this when Johannesburg Jewry celebrates the Jewish New Year that the community realises to the full what a tremendous force our Jewish friends are in the commercial activity of the Rand. On Tuesday and Wednesday last the city presented an empty and forlorn aspect, more akin to a Sunday than to ordinary business days of the week.

A commercial man, in the course of a chat this week, said it was almost impossible, in face of the varying kaleidoscopic changes in European politics, to see daylight, one day's decisions overriding those of the preceding one, and causing us in South Africa, at any rate, more or less unsuccessful groping in the dark as to ultimate issues. The position in mid-week appears still very precarious, and it would seem that little less than a miracle stands before another holocaust in Europe. A timely remembrance of the consequences wrought by the 1914-18 Armageddon may, it is hoped, bring the unruly elements to heel. One can plainly see, said a far-seeing commercial expert, that the coming winter months in Europe, and probably, also, in Britain, are going to be very stringent and also very trying to those in command. He still maintained that if Germany was not to be allowed to carry on her business without restrictions conditions are going to be exceedingly depressed, but he hoped that some mutually satisfactory solution of this grave problem might eventually be found, and he thought that the coming meeting of Dominion Premiers might go a long way towards such a solution. All eyes in the Union are now directed towards London, and the hope is general that Premier Smuts, in collaboration with other Dominion Premiers, may find a way out of the present European entanglement, leading to peace and restoration of world trade. As far as the Union directly is concerned, we are certainly experiencing very dull trade all round, although here and there is a little bright gleam. Engineering shops are beginning to get on their feet again, there are some orders coming in that will tend to make them busier than for some considerable time past. There are still further good orders being called for, which, in the main, are bound to be placed in the Union and thus give a fillip to the engineering trades. The building trade still keeps going fairly satisfactorily with still one or two good jobs coming out and probably more to follow. Contractors on the whole are not unhopeful as to future work. As far as can be gathered, the Commercial Exchange business so far developed in September has not been altogether satisfactory. Merchants, generally, are disappointed that orders from the mines have not been up to expectations. Still, only two-thirds of the month have gone, and it is hoped that the remaining portion of the month will show a more satisfactory turnover. Prices for iron and steel remain, with one or two exceptions, unaltered, but, in view of the terrible disaster which has overwhelmed Japan and the huge stocks that will be required by that stricken land, the tendency of prices is bound to show an advance, and it is not unlikely that we may see a smart rise in iron and steel goods here in the immediate future.

Iron and Steel.

Locally business has been dull during the past week or ten days, merchants having been by no means busily put to it by orders from the mines. The Commercial Exchange, contrary to hopes entertained at the beginning of the month, has been disappointing in respect of the volume of trading transacted.

France's Fuel Troubles.

To the courtesy of a leading local iron and steel importer we are indebted for the following excerpt from a letter received by him this week from one of the largest iron and steel concerns in Britain:—On the surface everything is hung up by the Ruhr trouble, but there is really a fairly large volume of business passing, and while German production is dwindling to a very small compass, it looks as if France will soon begin to find herself hard put to it to keep up production and only be able to do so at an increasing cost, owing, mainly, to shortage of fuel. In this connection the figures of the coal and coke deliveries made by Germany to France are of interest as showing how unfortunate, from the French point of view, has been the occupation of the Ruhr. During 1922 France secured from Germany 8,586,000 tons of fuel, of which 4,339,000 tons were coke. In the last six months of 1923 the corresponding figures given were only 1,365,000 tons and 22,000 tons. Hence France had to buy from England in the last six months 11,000,024 tons of fuel, as against 13,964,000 tons for the whole of 1922.

Britain: Mail Advices: Pig Iron Shipped from Middlesbrough during May.

During the month of May coastwise shipments of pig iron from Middlesbrough totalled 11,742 long tons and foreign shipments 20,725 tons, about 23 per cent. under the trade for May of last year. Of the foreign consignments 4,281 tons went to the United States and Canada, 500 tons to China and Japan, 168 tons to India and Australia, 3,745 tons to France, 1,927 tons to Belgium, 3,862 tons to Germany, 200 tons to the Netherlands, 1,027 tons to Norway and Sweden, and 2,146 tons to Italy.

Pig Iron Production.

Pig iron production in the United Kingdom fell off slightly from the May record of 714,200 tons, that for June being 692,900 tons. The output of steel ingots and castings in June amounted to 767,700 tons, as compared with the peak figure—884,700 tons—for May. There were 222 blast furnaces and 316 open hearth furnaces operating at the end of June, as compared with 223 blast furnaces and 352 open hearth furnaces a month previous.

Exports of Iron and Steel.

Exports of iron and steel from the United Kingdom in the first six months of 1923 far exceeded foreign consignments for the corresponding periods of the two previous years. A total of 2,070,628 long tons stands out against 1,140,047 tons for 1922, and 770,049 tons for 1921. Tremendous increases are noted in shipments of pig iron and ferro-alloy, plates and sheets, galvanised sheets, tin plate, ingots, blooms, billets, slabs, etc., and steel bars, rods, angles, etc.

British Foreign Steel Trade for First Half of 1923.

British exports of iron and steel and manufactures thereof for the month of June, 1923, totalled 365,149 long tons. This is a large drop from the May figure of 424,509 tons, and breaks the upward trend that the steel export trade had been experiencing for the past few months. Imports of iron and steel products during June amounted to 107,124 tons, a considerable gain over the May figure although less than the April returns.

Quotations.

Tin Plates.—23s. 1½d. f.o.b., 20 by 14 boxes.

Galvanised Sheets.—24-gauge corrugated sheets in bundles, £18 10s. to £18 15s. f.o.b.

Pig Iron.—Cleveland No. 1, 115s.; No. 3, 103s.; No. 4, forge, 95s. 6d.; mottled, 94s.; basic, 100s.; hematite mixed numbers, 100s.

Finished Iron and Steel.

Iron.—Crown bars, £12; best bars and angles, £12 10s.; tees, £13.

Steel.—Billets, soft, £9; hard, £9 15s.; bars and angles, £9 10s.; tees, £10 10s.; joists and channels, £9 15s.; sheets, singles, £13; doubles, £13 10s.; lattens, £14 5s.; plates, ship, £10; boiler, £14; rails, £10.

Wire Nails and Sheets.

Galvanised Wire in 4 cwt. lots: fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7-ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 16s. 6d. to 18s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 19s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 22s. 6d. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 20s. 6d. per cwt. Bolts and nuts, 50 per cent. discount; Staffordshire common bars, 13s. 9d.; and galvanised corrugated sheets, 22s. 6d. per cwt.

Second-hand Machinery.

The second-hand machinery market is very dull, and there appears very little chance of recovery just now. There have been some decent purchases by the Eckstein Group for piping, but beyond that there have been but few orders from the other mines. Construction work being practically completed for the present, no orders therefor have been forthcoming. A few requisites in the way of spares are being picked up and can always find a market when obtainable. Battery spares still remain very scarce, particularly for certain of the small outcrop mines, and new spares have been purchased to replace; the bigger mines, through the closing down of the Knight Central, have been able to purchase a few second-hand parts from this mine, but most of them are practically worn out and useless, so that there has not been much of a supply from this source. The municipalities outside are asking for tenders for different classes of second-hand machinery, such as crushers, etc., and this gives second-hand machinery dealers a little encouragement to get their quotes in as cheap as possible to obtain such tenders. The Belgian Congo has been buying a few mine tools and traction engines and trailers. Trucks and rails are very scarce and find a market quickly. It is pleasing to notice that several small mines now being worked by syndicates Roodepoort way are doing remarkably well, which is not only a pleasure to know, but good for business, and it is hoped that they will be able to continue as satisfactorily. If only the Government, said a prominent second-hand machinery dealer this week, would come forward and assist those who have small propositions and are working from hand to mouth, and help them to increase their plant to the producing stage, it would not only be good for the Government, but reduce the ranks of the unemployed knocking about and give us all something to do.

British Firms Secure Union's Grain Wagon Contracts.

A contract for 350 grain wagons has been placed with the Leeds Forge Co. by the Union Government, which wagons will be used for the transport of grain in bulk in connection with the grain elevator systems at Capetown and Durban. An order for 100 similar wagons was recently placed with the Metropolitan Railway Carriage and Wagon Co., a subsidiary of the Vickers group.

Growth of the Oil Refining Industry at Swansea.

The quantity of crude petroleum imported into Swansea during the first five months of 1923 was more than double that for the corresponding period of 1922, increasing from 47,345,927 imperial gallons to 98,552,193 gallons. Extensive additions to the plant of the local refineries are in progress, which will, within the next 12 months, enable the Anglo-Persian Oil Co. to supply half the entire gasoline consumption of the United Kingdom from the Swansea plant.

France.

The figures for the production of pig iron during May—the last month for which they are available—indicate a slight improvement in the industry. The number of blast furnaces in operation rose from 88 in April to 99 the next month. The progress continued to be confined largely to Lorraine and the East. Even this rate of operation, however, was still below that of January 1, when 116 blast furnaces were operating. Unofficial estimates of the production of pig iron in May place the total at about 390,000 tons, as compared to 350,000 tons in April. In this gain the Lorraine furnaces account for over 30,000 tons. Due to the decline of the franc, English and even American purchasers have again appeared in the market. The failure of prospects for improvement in coke and coal supplies has brought out some of those who were holding off in the local market, and some of the manufacturers have begun to raise their prices, especially for forward commitments. Steel production for May is estimated at 390,000 tons, as against 354,971 tons in April. As in the case of pig iron, local buyers are becoming discouraged as to the possibility of cheaper prices and are coming into the market.

Austrian Steel Industry during July.

The Austrian iron and steel industry was very productive during July, the output of the Alpine Montangesellschaft exceeding that of any other month thus far in 1923. Large orders for pig iron, ingots, steel bars and joists, mostly for export to Germany, were filled. The outlook for the immediate future, however, is uncertain. Prices were reduced from 10 to 20 per cent. during the month, the greatest variations occurring in the more highly manufactured products.

Australia.

The importation of iron and steel in May increased, particularly in wire, galvanised sheets and plates, beams and channels. General building and construction work is especially active in Australia.

The Czecho-Slovak Iron Situation.

Current reports of the Czecho-Slovak iron industry indicate a decline in new orders, although a number of the works are reported to have sufficient business booked to keep them operating on their present scale for three or four months. Of the country's 27 furnaces, 11 are in operation. Practically all export raw iron and steel is still shipped to Germany at prices based on British quotations.

Belgium.

Belgian staple industries, particularly metallurgical lines, have been benefited during July by active foreign buying, stimulated by the depreciation of the franc. Producers, however, hesitate to accept commitments beyond a limited period, usually not exceeding three months, because of the uncertain costs of production. Towards the end of June metal prices rose rapidly, but at present the majority of plants are refusing to quote, as they are booked until October. The number of Belgian blast furnaces operating on July 1 totalled 38 (compared with 35 on June 1), producing 7,250 metric tons of basic pig and 225 tons of foundry iron per 24 hours. Despite increased demand, rising production holds pig iron prices steady. Heavy sales during the past month, especially in England, have raised semi finished steels about 65 francs per ton. All finished steels have advanced since the middle of June

Swedish Iron Ore Exports Affected by Ruhr Occupation.

For the first four and one-half months of 1923 the Swedish iron ore exports were about 50 per cent. of normal. In the past about 65 per cent of the total Swedish ore has been exported to Westphalia, but the Ruhr occupation has closed this market. The Swedish pig iron production has been lower than at any time since 1912

Steel Market in Netherlands East Indies.

The structural steel market in the Netherlands East Indies remains active with stocks ample. Sales of bars, plates and plain galvanised sheets are slow, apparently as a result of overstocks

America.

Imports from British South Africa to the United States, during the month of July, according to cabled information received by Mr. William E. Vaughan., jun., (Acting) American Trade Commissioner, from the United States Department of Commerce in Washington, totalled $915,000 (approximately £200,000), while exports amounted to $3,021,000 (approximately £660,000) for the same period. For the month of July, 1922, the figures were $900,000 and $2,200,000 respectively, while June, 1923, totals were $1,000,000 and $3,000,000. At the present time the anthracite strike in the United States is serious; however, the outlook is very promising. The financial situation of the country is excellent. Wages are very high, consumers' stocks generally are low, and demand is good. Prices of steel, textiles, cotton and coal are advancing, while building material prices are declining

Pig Iron Production in June.

The production of pig iron, totalling 3,668,000 long tons for June, may be compared with 3,868,000 tons in May and 2,361,000 tons in June a year ago. Steel ingot production amounted to 3,749,000 long tons, as against 4,196,000 tons in May. Unfilled orders of steel as reported by the United States Steel Corporation aggregated 6,386,000 long tons on June 30, as against 6,981,000 on May 31, and 5,636,000 tons on June 30, 1922. Prices of iron and steel declined during the month. The melt of foundry iron in their foundries in June was 81.27 per cent of normal, as compared with 81.12 per cent. in May, and 50.75 per cent. in June, 1922. A total of 62,019,000 pounds of copper was exported in June, as compared with 62,019,000 pounds in May, and 65,604,000 pounds in June a year ago. Production of steel sheets by independent steel companies in June increased, and shipments were larger than production. Sales were about 32 per cent larger than in April, but unfilled orders declined; sales of fabricated structural steel declined to 58 per cent of capacity in May

Germany: Coal.

To help offset the shortage in domestic production, resulting from the Ruhr occupation, black coal mining has been attempted on a more extensive scale in the South Harz district of Germany in mines abandoned in the late 'sixties of the past century. Relatively important coal deposits, said to be capable of being worked with profit, are attracting operations in the vicinity of Nordhausen, and some abandoned pits are being reopened

Increased Railway Earnings.

It is very satisfactory to note that according to the latest Bulletin of the General Manager of Railways, railway earnings continue to improve. For the four weeks ended August 18 the weekly average was £425,000, or, approximately, £37,000 above the estimate. Taking the first three months of the financial year, the railways and harbours returned a profit of no less than £220,752, after meeting capital charges, etc. There is, as seems inevitable, a loss on branch lines, four only out of 46 showing a profit. The General Manager reports increasing growth in traffic. From the beginning of July to the middle of August over two and a quarter million bags of maize were railed to the coast, while coal shipments for the four weeks ended August 8 amounted to upwards of 286,000 tons. Taking everything into consideration, the improvement shown in the previous period has increased materially and gives hope for further increase

S.A. Reserve Bank.

According to the statement of the Bank at September 8 the ratio of cash reserves to liabilities to the public was 65.5 per cent.

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"CONDENSITE CELERON": Water, Oil and Grease proof.
Rodent proof.
Non-absorbent, non-ageing.
Not affected by ordinary solvents.
Resilient and self-supporting.

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Will easily outlast other non-metallic constructions.
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NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty-Sixth Ordinary General Meeting of Shareholders for the year ended 31st July, 1923, will be held in the Board Room, The Corner House, Johannesburg, on THURSDAY, 13th DECEMBER, 1923, at 3.30 p.m., for the following business:

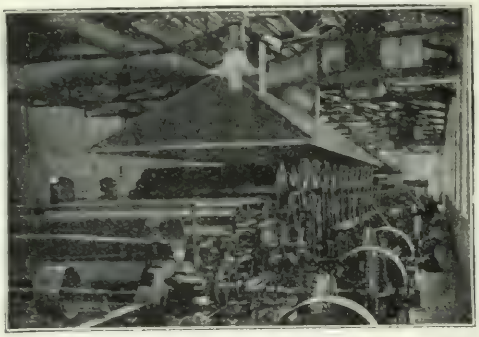
1. To receive and consider the Balance Sheet and Accounts for the year ended 31st July, 1923, and the Reports of the Directors and Auditors.
2. To elect Directors in the place of those retiring in accordance with the provisions of the Company's Articles of Association.
3. To determine the remuneration of the Auditors for the past audit and to appoint Auditors for the ensuing year.
4. To transact any other business which may be transacted at an Ordinary General Meeting, or which is brought under consideration by the Report of the Directors.

The Transfer Books of the Company will be closed from the 7th December to the 13th December, 1923, both days inclusive.

By Order of the Board.
TRANSVAAL CONSOLIDATED LAND
& EXPLORATION CO., LTD.,
Secretaries.

Per H. J. SUMMERLEY.

Head Office: The Corner House, Johannesburg
10th August, 1923 7651



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UNION STEEL CORPORATION
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Fish Plates. Grizzley Bars, Tube Mill Bars and Pegs in High Carbon Steel.

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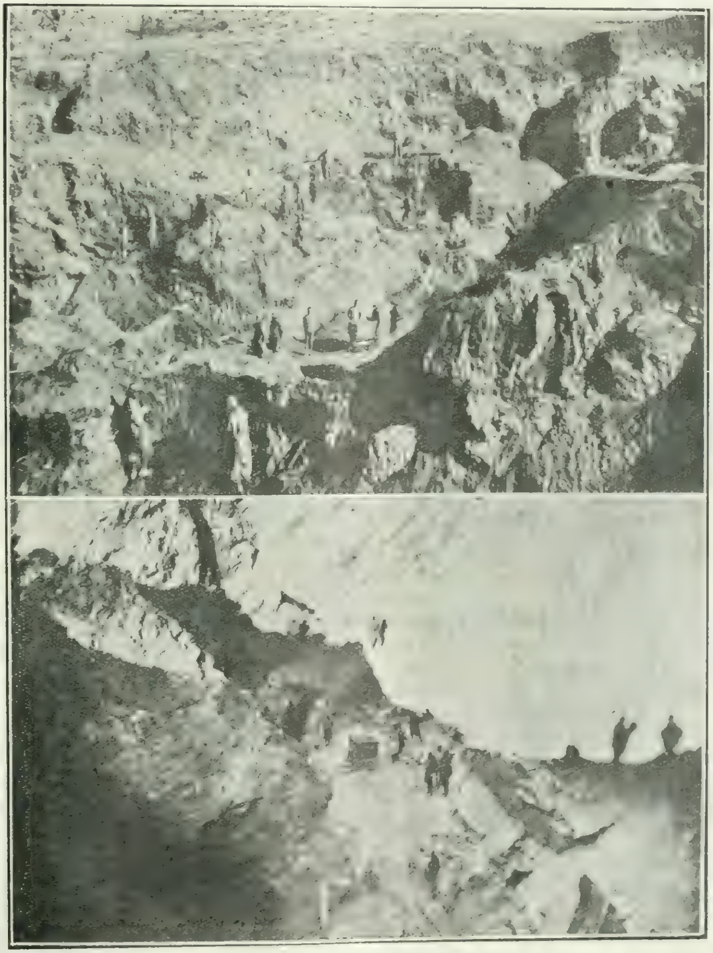
New Modder Report—What the Mines Buy—Life of the Rand—
How "Goldfield" Rose and Declined—Crown Diamonds Meeting.

Industries The South African Commerce
Mining & Engineering Journal
THE ONLY WEEKLY MINING PAPER IN THE CONTINENT OF AFRICA.
Finance Established 1891. Transport

Vol. XXXIV., Part I. JOHANNESBURG, TRANSVAAL SATURDAY, SEPTEMBER 22, 1923 No. 1669

World's Most Important Chrome Iron Workings.

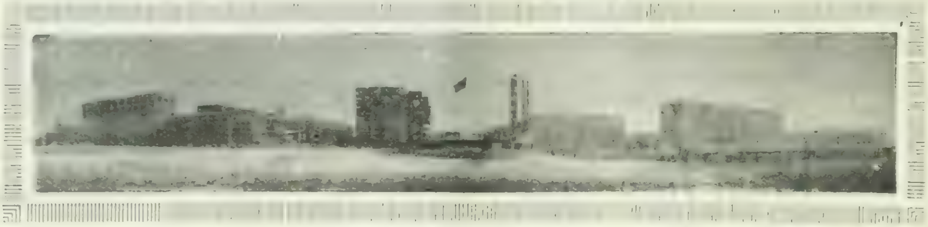


Two photos of workings at the great Chrome Iron Ore Deposits, Selukwe.
Top photo shows Railway Block No. 1 Area 230 ft. level (Tayler's Quarry).
Bottom photo: Railway Block (Friable Ore) Area from north.

G.E. Factories. No. 7.

Trade Mark

The Home of Quality Products.



5,000 *Employees* *Ground area 384 acres.* *Floor space 2,117,000 square feet*

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ELECTRIC MINE LOCOMOTIVES,
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AIR COMPRESSORS,
ETC, ETC.

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Cor. Long and Dorp Sts.
CAPETOWN
BOX 1482

The Year with the New Modder.

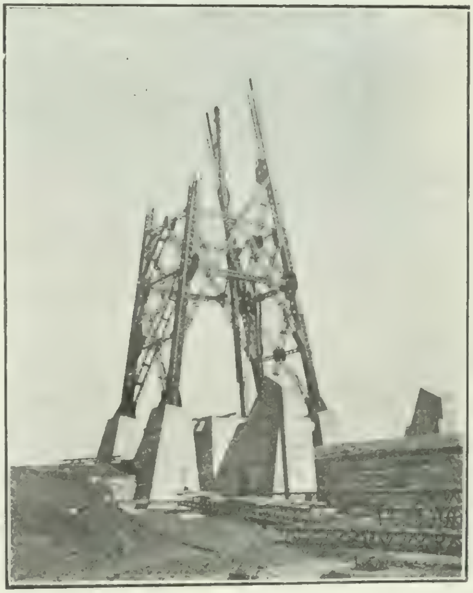
NET PROFIT £1.678.418—GRATIFYING DEVELOPMENT RESULTS—ORE RESERVES INCREASE IN TONNAGE AND VALUE—THE SOUTH-WEST CIRCULAR SHAFT.

A net profit of £1,678,418 was earned by the New Modder for the year ended June 30th last. A balance of £243,538 was carried forward, making a total of £1,921,956 available for distribution. Of this, dividends absorbed £1,400,000, and Government and Provincial taxes £241,957. The theft of 3,490 ounces of gold in February last was fully covered by insurance. The main features are set out in the following table, in comparison with the corresponding figures for the two preceding years:

	Year ended 30th June, 1921.	Year ended 30th June, 1922.	Year ended 30th June, 1923.
Tons milled	1,083,000	947,000	1,340,000
Yield per ton milled—dwts.	9·741	9·499	9·142
Yield per ton milled at standard price of gold.	40s. 11d.	39s. 11d.	39s. 8d.
Working costs per ton milled	23s. 5d	22s. 10d	16s. 8d.
Working profit per ton milled at standard price of gold	17s. 6d	17s. 1d	23s. 0d.
Working profit at standard price of gold	£947,625	£807,682	£1,540,897
Revenue derived from price of gold above standard	£751,427	£359,583	£112,584
Total working profit ...	£1,699,052	£1,167,265	£1,653,481
Working profit per ton milled	31s. 5d.	24s. 8d.	24s. 8d.
Development footage ...	20,165	17,677	23,581
Ore reserve—tons ...	8,884,600	8,577,600	9,060,800
Ore reserve—value, dwts.	8·4	8·6	8·8

In the course of their annual report the Consulting Engineers write:—

"The yield per ton milled was practically the same as for the previous year. An excellent year's work accomplished the crushing of a record tonnage at costs which have been bettered only twice in the past, and the resulting profit has been exceeded but once, viz., for the year 1920-21, when gold was at its highest. The reduction of 6s. 2d. per ton milled on the previous year's costs is, to a large extent, due to the re-organisation effected subsequent to the 1922 strike, but the improvement in efficiency, evident from the records, is by no means due entirely to greater efforts on the part of the European employees. While a gratifying increase of efficiency on the part of both white and native employees is recognised, the introduction of better appliances and improved methods, and the provision of greater facilities for carrying out underground work, have been prime factors in the results attained. The fall in the price of gold of 12s. 5d. per ounce is equivalent, on the tons milled basis, to the reduction in working costs. The native labour force was adequate throughout the year, and has played an important part in the year's achievements. Development operations have been on an extensive scale, and have covered the whole length of the property. The 23,581 feet done for the year is the highest since 1917. The values obtained from the reef disclosures have been generally very gratifying, 82 per cent. having proved payable at an average of 785 inch-dwts. The payable ore developed for the year is estimated at 1,653,700 tons valued at 11·5 dwts. This is greater in both tonnage and value than the ore mined from reserves during the period, although the ore mined was of a somewhat higher value than the average of the ore reserve. The ore reserve as re-estimated at 30th June, 1923, shows: 9,060,800 tons valued at 8·8 dwts. on an average width of 66 inches. These figures include 585,500 tons, valued at 5·8 dwts., standing in shaft and boundary pillars, and, therefore, temporarily unavailable. Compared with the previous calculation, the total shows an increase of 483,200 tons, with a rise in value of ·2 dwt. per ton, both of which are chiefly due to the new ore added. There are, however, several blocks of low-grade ore previously excluded, which have been brought into reserve on account of the lower working costs now obtaining. Sandfilling in the north-eastern portion of the mine has been carried on during most of the year, and this has made it possible to recover a considerable quantity of ore left as pillars, as well as some isolated blocks remaining in this area. Capital expenditure for the year amounted to £53,980, chiefly on account of the extension of the East reduction plant and preliminary work on No. 2 Circular Shaft, in former reports called the South-West Circular Shaft. The sinking of No. 2 Circular Shaft has been commenced, and details of the work accomplished to date are given in your Manager's report. Some delay has been occasioned by late arrival of certain of the surface equipment, but full sinking operations should be started by the end of this calendar year, and, given reasonable conditions, the shaft should be carried to its final depth of about 3,000 feet before the end of 1925. Owing to the strong position of the mine as to ore reserves and general equipment, there will be no necessity to hasten the final equipment of this shaft, and expenditure thereon can, therefore, be spread over a period of years. Meanwhile the underground work of advancing the incline shafts and main connections for developing the south-western portion of the property is proceeding, so that this section can, if required, be rapidly opened up when the shaft is completed. Ultimate equipment for this shaft will be similar to that of the existing No. 1 Circular Shaft (cages and rope guides), which has served so satisfactorily, although some alterations in detail will be made to suit the greater depth of hoisting at the new shaft. Provision will also be made to supply both reduction plants with ore from either shaft by means of surface haulages, work on which is already well forward. The value of the ore reserve and its general availability indicate that a yield similar to that of the last couple of years should be obtained as fairly representative of the possibilities of the mine."



New Modder's latest shaft: Erecting the headgear at the new circular shaft. Large concrete foundations have been installed. A big elevated ore bin will be erected, and tipping and storage arrangements and surface transportation of the ore will be particularly efficient.

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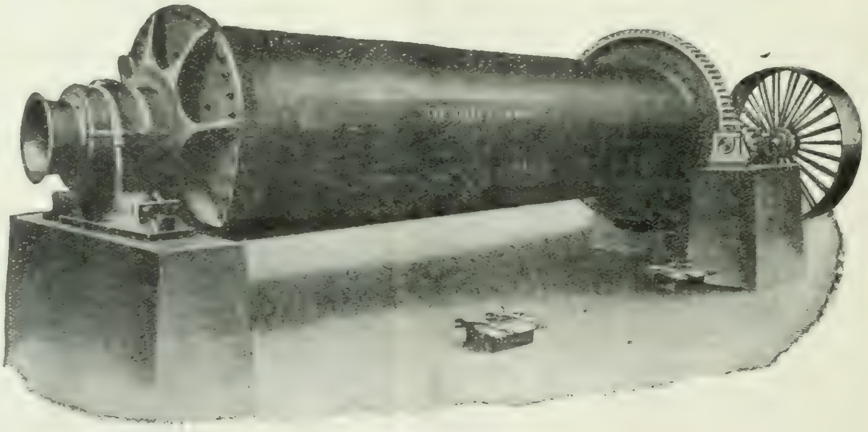

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Life of the Witwatersrand.

THE G.M.E.'s ESTIMATES—IMPORTANCE OF THE WORKING COST FACTOR—JOHANNESBURG DEPENDENT ON THE GOLD INDUSTRY—A LESSON FROM NEVADA.

Probably no aspect of the gold mining industry of the Witwatersrand has been debated with so much vigour or has aroused so great an amount of controversy as the question of how long the Rand is going to last. The answer to this question must in large degree provide, according to most students of Witwatersrand economics, the reply to the more parochial query of "How long is Johannesburg going to last?"

THE TOWN THAT COULDN'T REDUCE WORKING COSTS.

Goldfield, Nevada, as it looked at the height of its prosperity in 1907. Practically all that remained of Goldfield was destroyed by a fire a few months ago.

The Rand's Dependence on the Mines.

There are a good many people in this town who profess the belief that Johannesburg will continue to be the principal town of the sub-continent long after all the mines in its vicinity have been exhausted. We ourselves have never been able to subscribe to this belief. To us it seems an irrefutable conclusion that Johannesburg and the Witwatersrand live entirely on the gold mining industry, and that if this ceases to produce its constant stream of wealth, or if it suffers any serious contraction, Johannesburg and the Witwatersrand must suffer and contract proportionately. Moreover, the whole of South Africa will (unless industries of similar proportions and importance are built up in the meantime to take the place of the gold mines) experience a well-nigh staggering blow as the result of any large diminution of the Rand output. To measure even to an approximate degree the duration of the period during which gold mining will be continued as an industry of first-rate importance is an excedingly difficult matter. The solution of the problem depends on a large number of unknown quantities and complex factors. In the main it must be determined by the level at which working costs are maintained, and this, in turn, involves such considerations as labour supply, taxation, railage charges and a host of other matters.

Sir Robert Kotze's Forecast.

At various times estimates of the payable tonnages of ore remaining in the mines have been formulated by different investigators and authorities, and the latest estimate is contained in the Blue Book just issued by the Department of Mines and Industries. The Government Mining Engineer, in his report for the year ended with December last, offers a forecast as an indication of the probable extent of the decline of the gold mining industry of the Witwatersrand during the next ten years. Sir Robert Kotze estimates that at the end of 1927 there will be 24 mines crushing instead of 40 as at present; that the tonnage milled will have declined by 22 per cent., and the value of gold won by 17 per cent. He further estimates that by the end of 1932 the number of mines crushing will have declined to 21; the tonnage milled will have contracted by 26 per cent., and the value of gold won by 23 per cent. This is, of course, exclusive of small mines crushing less than 20,000 tons per annum; and it should be borne in mind that the majority of the mines which will have ceased operations are those with relatively small crushing capacities. The forecast takes no account of possible new producers other than New State Areas and West Springs. These are more encouraging calculations than some which have been presented to the public during the past year or two but they nevertheless set a governmental and closely signed seal of authority on the widely expressed view that the Witwatersrand is a diminishing industry. Its future depends, as already stated, on working costs.

The Rise and Decadence of Goldfield.

In this regard reference may be made to an illuminating article appearing in a recent issue of "Mining and Metallurgy," which shows how high operating charges have helped to deal a death blow to what was, a few years ago, one of the chief gold mining camps of the United States—Goldfield.

There is a distinct lesson for the Rand and for South Africa generally, in the case of the town of Goldfield in Nevada, U.S.A. This town, as its name implies, was built upon the gold mining industry. Prospectors found some promising outcrops in this vicinity in October, 1902, and in November, 1903, the main street out of town was laid out. "In four years Goldfield had a population of 20,000 people, a stock exchange (during one week the business of which amounted to a million and a quarter dollars), several banks, several pretentious brick and stone buildings built from a local rhyolite of a beautiful purplish-pink tint, a water works, well organised and equipped fire department, two clubs, a first-class post office, three railroads, and all the other attributes of a successful boom town. Coincident with this mushroom-like growth, however, was an astonishing record of production which built many fortunes, the outstanding episode of which was the production of one carload of ore which, shipped to the Selby smelter in San Francisco, netted to the leasers $574,958.39. In 1906 Goldfield added about 12 million dollars to the wealth of the world, and in 1907 the place reached its height of prosperity.

"In 1907 beside the substantial stone office buildings mentioned, Goldfield had a prententious modern up-to-date brick hotel which cost $400,000, as well as many that did not measure quite up to this standard and several really palatial residences. Goldfield became the county seat of Esmeralda County, which honour it wrested from the little town of Hawthorne, the scene of some of Mark Twain's adventures. The future was bright and rosy. One optimist at that time wrote: 'Goldfield is, and will remain, the first city of the Sage Brush State, made and to be kept so by virtue of her mines and her citizens. Not alone upon her own resources, which are sufficient, does she rely for the perpetuity of her prestige. Geographically she is rightly placed and every tributary camp contributes to her power, her population, her purse and her permanency.'"

But the financial break in 1907 struck Goldfield a hard blow at the time when her rich ore was approaching exhaustion. High wages, high cost of supplies, and the high production costs of the smelters (ore not giving 50 dollars to the ton went to the dumps) put the finishing touch on Goldfield's decline. Had it been practicable to continue to operate this mining field on a low grade basis with reasonable working costs, then Goldfield might still be an important city. But the place never recovered from the disaster of 1907, and an American mining engineer writing in "Mining and Metallurgy" in August, 1923, says:—"I visited Goldfield in March of this year; it was a doleful heart-sickening sight to one who had seen it in its prime. Only a few hundred people; its total production reduced to three carloads per month; and its streets and residences deserted."

Johannesburg, like the Nevada town, has reached its height of prosperity. Johannesburg, like Goldfield, with its Paris fashions and gorgeous hotels, depends for its existence on the gold which lies in its vicinity, and unless the low-grade ore of the Witwatersrand can be worked at a profit, which means on a low-grade basis of operation, the Golden City of South Africa may decline like the town of Goldfield, Nevada.

The fifth annual District Mine Ambulance Competitions for the Far East Rand District will be held at the Modder East to-morrow (Sunday), the 23rd inst.

Transvaal Platinum.

HISTORY OF THE DISCOVERY.

In an interesting paper read before the C.M. & M. Society on Saturday last, Mr. Max Baumann gave an account of the discovery of platinum in the Waterberg district, with which he was associated. According to Mr. Baumann the actual discoverer of the platinum was Mr. Adolph Erasmus, a prospector of long standing in the Waterberg district. Mr. Baumann had been grub-staking the prospector, and one day when the two were out together on a gold prospecting trip, Mr. Erasmus reported the finding of traces of platinum. As on scientific grounds it was highly inprobable that platinum would exist in acid country rock, Mr. Baumann was extremely sceptical, but in the characteristic optimism of the prospector, Mr. Erasmus continued in his search. His reward was the finding of platinum in small nuggets about the size of a pin's head. The discovery was the result of great patience, and the continuous loaming and panning of ant-heaps and soil. By one of those flukes which occur in prospecting a wonderful panning was got from one of the first samples taken from the outcrop once it had been established.

A Twenty Miles Lode.

The location of the lode containing the platinum is about 24 miles north of Nylstroom and about a hundred miles to the north of Pretoria. The lode has been traced from a point on the farm Rietfontein and in a west to north westerly direction for a distance of about 20 miles on to the farm Doornkam. Active prospecting has shown that in the outcrop above-named the lode was very wide (30 feet), but the values so far have been low. At the farm Rietfontein, where the lode can be traced continuously for 3,000 yards, the outcrop has been trenched and partly stripped for a distance of about 400 yards along the strike. Good, but erratic, results were obtained here. Mr. Baumann, in his paper, stated that he had purposely not made a great point of the importance of the discovery. So far the presence of platinum at the outcrop had been proved, and the next thing was to prove the presence of a payable mine. Once that was done there would be no need to elaborate the value of the new discovery, or what possibilities of increased mining activity throughout the Northern Transvaal would be opened up.

Platinum Value.

The value of platinum lies in its high specific gravity, high melting point, malleability, ductility, and resistance to attack by ordinary chemicals. During the war it realised 770s. an ounce. But it is only within a comparatively recently period that its value was discovered. At one time it was considered a nuisance to gold diggers, and it is recorded that in 1774 some Spanish miners sold "schlenter" gold bars to a Dutch ship. This consisted of platinum bars plated with gold. When the Hollanders discovered the trick which had been played on them they caught the Spaniards and hung them on the yard-arm of their ship! In some of the towns in South America, where gold-platinum gravels were being treated, the platinum was discarded as valueless, and the tailings thrown into the streets. With the rise in the value of platinum these streets were dug up, and the street metal retreated at considerable profit. At one time also platinum was used to debase coinage! The total platinum output of the British Empire in 1920 was only 2,822 ounces, but since that date a not inconsiderable amount has come from the Rand as osmiridium, obtained as a by-product in the treatment of the Witwatersrand banket for gold.

Rand Costs and Profits : Monthly Comparisons.

JULY AND AUGUST RESULTS CONTRASTED.—GOVERNMENT AREAS BIG INCREASE IN PROFIT.

The following table shows the essential comparative features of profits and working expenses on the Witwatersrand during July and August:—

COMPANY.	PROFITS.			COST PER TON.		
	August.	Increase.	Decrease.	August.	Decrease.	Increase.
	£	£		s. d.		
Aurora West	2,038	4	—	20 2	2d.	—
Brakpan Mines	51,312	3,606	—	21 0	11d.	—
City Deep	70,033	3,242	—	22 8	3d.	—
Consolidated Main Reef	10,819	—	3,220	27 2		1/8
Crown Mines	91,476	4,168	-	19 2	—	1d.
Durban Deep	4,481	1,106	—	25 3	1/2	--
E.R.P.M.	30	4,243		20 7	—	1d
Ferreira Deep	9,572	5,806	—	21 2	9d.	—
Geduld Proprietary	43,422	2,623		18 11	4d.	
Geldenhuis Deep	1,136	1,616	—	20 8	—	—
Government Areas	170,725	21,439	—	16 10	9d.	—
Langlaagte Estate	33,572	1,117	—	18 9	9d.	—
Meyer & Charlton	20,091	-	12	22 6	—	1/6
Modder "B"	75,153	1,096		19 4	4d.	—
Modder Deep	70,210	2,990	—	17 2	7d.	—
Modder East	17,612	1,988		24 0	—	3d.
New Goch	2,392	988	—	18 8	—	2d.
New Kleinfontein	404	-	161	20 4	—	7d.
New Modder	145,364	—	790	16 5	—	4d.
New Primrose	1,487	33	-	17 6	—	5d.
Nourse Mines	7,238	--	1,512	23 7		1/5
Randfontein Central	42,106	1,915	-	19 8	—	6d.
Robinson Deep	36,728	958	—	17 9	5d.	-
Robinson Gold	5,895	1,375		14 8	1/9	
Rose Deep	12,037	—	249	16 10	--	5d.
Simmer & Jack	7,436	3,620	-	16 9	—	8d.
Springs Mines	50,697	3,027	—	22 11	—	2d.
Sub Nigel	6,801	16	—	40 1	-	4d.
Van Ryn Deep	66,065	3.008	—	18 11	8d.	—
Van Ryn Estate	8,543	487	—	19 6	—	1/6
Village Deep	7,058	—	3,734	25 1	—	3d.
West Rand Consolidated	4,093	—	429	21 3	1d.	—
Wit (Knights)	7,606	239		20 10	2d.	-
Wit Deep	7,676	—	1,033	20 3	-	
Wolhuter	2,010	—	1.410	19 7	—	3d.

The above figures are based on the price of Gold being taken at the following levels

	July, 1923.	August, 1923.
Barnato Group Union Corporation New Kleinfontein	£4/9/3 per oz.	£4/10/0 per oz.
Other Companies	£4/7/3 nett oz.	£4/8/0 nett oz

The Uganda Railway.

Mr. C. L. N. Felling's first official report as general manager of the Uganda Railway covers a period prior to his taking over the management, and is for the year ended 31st December, 1922. It conveys the pleasing intelligence that, after meeting all loans and other charges, the working of the railway and marine services as a whole resulted in a net profit for the year of £56,785, as compared with a net loss for the calendar year 1921 of £8,870. The gross earnings for the period named amounted to £1,059,656, the gross expenditure being £899,899, while the surplus of gross earnings over gross expenditure was £159,757. In the second half of the year there was a steady improvement in traffic, and this was most marked in export commodities other than Uganda cotton and cotton-seed. Upwards goods traffic, consisting mainly of imports, amounted to 121,049 tons for the year, against 101,317 tons for the preceding year. Downwards goods traffic reached a total of 183,724 tons for the year, against 156,107 tons for 1921. Of the upwards traffic, 38,167 tons represented Government traffic mainly construction material for the Uasin Gishu Railway extension. Mr. Felling mentions the interesting fact that since the commencement of the present year the head offices of the general manager and the traffic manager, and that portion of the office of the chief mechanical engineer which controlled the locomotive running work, have been amalgamated. One transportation department has taken the place of the pre-existing separate traffic and locomotive running branches, while in almost every other department a considerable amount of reorganisation has been effected, and "further organisation will proceed steadily for a long time to come." The general manager adds that a number of important recommendations have been made in regard to the general system of control of the Kenya and Uganda Railway and Lake Marine services, and in regard to future railway and lake transport improvements and extensions. These recommendations are under consideration by the Imperial Government.

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Chamber of Mines Report.

EFFECT OF GOVERNMENT RESTRICTIONS ON NATIVE LABOUR RECRUITING — THE UNION CASTLE COMPANY AND THE MINING INDUSTRY.

The report of the Transvaal Chamber of Mines for the quarter ended with August 31st, which is to be presented at the ordinary meeting of the Chamber to be held on Monday, refers to a large number of matters of vital importance to the Industry. The following extracts are taken from the report of the Executive Committee, the report of the Gold Producers' Committee, and the Collieries Committee:—

The monthly report issued by the Department of Native Affairs shows that at the 31st July, 1923, 293,285 coloured persons were employed in labour districts of the Transvaal. Of this number 217,302 were engaged on mines and on the various classes of work, *i.e.*, chemical, metallurgical, brick-making and other works, as defined in Act No. 15 of 1911, and 75,983 were in other employ.

The action of the Government in restricting the engagement of Portuguese natives on the mines has had a most unfortunate effect on the Industry's labour supply, which at the end of July showed a decrease of 16,500 as compared with the number at the end of February. During August an improvement in the British South African supply prevented any further reduction; but a number of mines, and particularly the Crown Mines, Luipaards Vlei and Simmer and Jack, are severely affected by the artificial shortage that has been created. In spite of the most urgent representations to the Government it would appear to be the latter's intention to continue the restrictions, in order to leave vacancies available for British South African natives whenever they feel inclined to come to the Rand.

The report of the Committee of Inquiry, consisting of Colonel Pritchard (Director of Native Labour) and Mr. J. A. Ashburnham (Chief Magistrate, Johannesburg), on its investigations in the Transkei, has not yet been published. But there can be no doubt that the conclusions of that Committee must indicate the impossibility of an adequate supply of labour for the industries of the Union being available without recourse to Portuguese sources.

Freight on Gold.

It was previously reported that the Union-Castle Mail Steamship Company had made a claim on the Industry for freight alleged to be due in respect of the premium obtained on the sale of gold. Clause 20 of the Union Castle Company's Bill of Lading provides that the making of an incorrect declaration shall entitle the Company to charge double freight. The Union Castle Company now apparently allege that a misrepresentation was made by the Industry of the value of gold shipped, and under the above clause they have based their claim on double the amount of the freight which they allege should have been paid on each shipment, and now assess their claim at £315,877. The date for hearing the action has been fixed at 1st November.

Disposal of Enemy Property—Bearer Shares.

The Custodian of Enemy Property demanded the issue to him of new title to enemy bearer securities, irrespective of whether the original title was located in South Africa or elsewhere. Judgment has now been given in favour of the Custodian, and Companies will be required to issue the duplicate title demanded by the Custodian.

Bravery of Mine Employees.

The Chamber's medal for bravery and a gold watch have been presented to Mr. B. E. [illegible] in recognition of an act of bravery performed by him at the Randfontein Central Mine on the 4th July last.

The Government Miners' Training Schools.

Your Executive Committee has appointed a Sub-Committee to go into the question of the future policy in regard to the training of miners.

Report of Gold Producers' Committee: Industrial Conditions of White Employees: Conciliation Boards.

Crown Mines.—The report of the Crown Mines Conciliation Board, and a minority report by Mr. T. G. Martin, were published in the *Government Gazette* of 17th August. The result of this Board was eminently satisfactory from the point of view of the Industry.

New Modderfontein.—A Conciliation Board under the machinery set up by the Mining Industry Board was held in connection with an adjustment of contractors' prices on the New Modderfontein. The Board unanimously agreed that the matter of such adjustments in prices was not one that could be dealt with by a Conciliation Board but must be settled on the mine.

City Deep and Modderfontein B.—Applications for Conciliation Boards on these two mines were withdrawn by the applicants.

New State Areas.—In this case an application for a Conciliation Board is pending.

Engine Drivers.—On several occasions since the strike, the S.A. Amalgamated Engine Drivers' and Firemen's Association has approached the Committee with a view to an increase in the wages of its members. A further appli

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called, was received on August 24th. A reply has been sent pointing out that the average wage of engine drivers and firemen is now [illegible] per shift, as compared with 18s. 7d. per shift in 1914, that any increase in the wages of these classes is not only unjustifiable, but would necessitate an increase in the wages of other employees; and that the request could not therefore be granted, more especially in view of the finding of the Coal Mines Conciliation Board against any such increase in wages.

Standing Committee on Dust Sampling.

The [illegible] survey, [illegible] was completed during the period under review, shows an average of 1·4 milligrams per cubic metre of air.

Between 1st June and 31st August, 1923, 1,929 dust samples were taken by the Chamber's Inspectors, and [illegible] samples by the Mine Dust Inspectors: these were all analysed in the Chamber's laboratory. In addition, during the same period 228 water samples and 47 air samples were examined, and 9,045 konimeter samples were counted.

A Joint Committee on Ventilation has been appointed, consisting of four members nominated by the Industry and four Inspectors of Mines nominated by the Government Mining Engineer. The Dust Sampling Committee is collaborating with this special committee.

Mining Regulations.

Crown Mines, Ltd.—An attempt by the Mines Department to compel the Crown Mines, Ltd., to dispense with the services of an efficient native driver on the rock haulage underground has been defeated in the Magistrate's Court.

West Rand Consolidated Mines, Ltd.—A prosecution against this Company for employing an alleged unskilled person on certain work has failed, the Magistrate having held that the native employed was actually skilled.

Companies Tax Ordinance, 1923.

Payment of the tax due under the Companies Tax Ordinance has been made by the financial corporations and various mining companies "under protest." It is understood that the legality of certain aspects of the Ordinance is being tested in the Courts.

Board of Trade and Industries.

The Government have refused to appoint to the Board of Trade and Industries a member who is directly conversant with the problems of the Mining Industry, although the recommendations of the Board may have a most important bearing upon the prosperity of the Industry.

British Empire Exhibition, 1924.

The Gold Mining Industry is providing several exhibits for the British Empire Exhibition, including cinematograph films showing conditions on the mines. These will not form a separate unit at Wembley, but will be included in the general South African exhibit. The Industry is spending £4,000 in connection with the matter; any surplus after paying for the exhibits mentioned will be handed over to the Administrator's Fund for the Exhibition.

Marketing of Gold.

The Agreement under which all gold exported by the mines was sent to London for realisation expired as from 1st August, and several shipments have since been made direct from Durban to Bombay. There seems considerable prospect of this trade attaining large dimensions. A small saving to the mines is effected thereby.

Colliery Rescue Station.

The question of the establishment of a central rescue station for the collieries has been again under consideration by the Collieries Committee, in the light of the decision of the Gold Producers' Committee that a joint station was not desirable. On the collieries the establishment of rescue brigades or a central rescue station has been made compulsory, under Government Notice No. 1317, promulgated in the *Union Gazette* of 10th August, but provision is made therein for exemption in the case of companies exceptionally circumstanced.

British Empire Exhibition, 1924.

The exporting collieries have arranged to spend the sum of £2,500 in connection with this Exhibition.

The report refers to the important changes (already stated in the Journal) which are to take place as from the end of the year.

Indian Coal and S.A. Competition

COUNTERVAILING DUTY DEMANDED.

The secretary of the Indian Mining Federation has addressed a letter to the Secretary, Government of India, Commerce Department, regarding the advisability of imposing a countervailing duty on the bounty-fed South African coal which is imported to India. As far back as August, 1921, the committee of the federation drew the attention of the Government to the adverse effect of the introduction of African coal. Since then circumstances have slightly changed in favour of the Bengal coal. There has been a reduction in railway freights from the coal fields to Bombay, and also in the shipping freights from Calcutta to Bombay, but it is remarkable that even with these additional advantages, the Bengal coal has been unable to recover even a part of its extensive market in Bombay in course of two full years. It is impossible to offer Bengal coal of the South African quality ex-railway station at anything lower than Rs. 27.14 per ton, and if shipped from Calcutta, at anything lower than Rs. 27.11 per ton ex-bunker. Until very recently the South African coal was offered at Bombay at a figure fairly below these quotations. The explanation is that the South African Government grants a rebate on railway freight of 7s. 9d. per ton of 2,000 lb. in respect of all coal shipped as cargo overseas beyond South and South-east Africa from Port Natal and Lorenco Marques. The committee of the federation suggest that the Government of India should take immediate action under section 8A of the Indian Traffic Act of 1894, as amended, to levy countervailing duty on the South African coal equal to the amount of the bounty, which works out at about 8s. 9d. per Indian ton of 2,240 lb. The committee of the federation are now in a position to say that in the event of Bengal coal tending to recover its lost market in Bombay, transport difficulties will not in any way handicap such tendency. The wagon position is at the present moment unusually easy, and, owing to a marked slump in the demand of the industries, the railways are now in a position to meet the requirements of the collieries almost daily full on indent. Other suggestions involve a reduction of railway freights and a prohibitive duty of at least five rupees a ton on Natal coal. The main obstacle to the resumption of pre-war coal traffic between the coal fields and the Calcutta docks is the freight. In 1914, the railway rate from Jherriah was Rs.3, 2 as. per ton, and from Raneegunj Rs.2, 9 as., now the rate from Jherriah stands at Rs. 4/8. There was a surcharge imposed in 1916 which was raised to 4 as. 6 pies in 1920, when also the rebate of 20 per cent. of the railway freight was withdrawn; and this has not been revived up to the present time, though the Indian Mining Association representing the owners of first class collieries joined the federation to petition the Government some time early in June last for the introduction of the rebate system and for a reduction in railway freights.

The Coal Trade.

According to the monthly bulletin of the General Manager of Railways, a total of 1,113,008 tons of coal were hauled over the system during the quarter ending on June 30, 1923, as compared with 923,391 tons for the corresponding quarter of last year, an increase of 189,697 tons. General merchandise carried totalled 1,224,539 tons, as against 858,427 tons—an increase of 366,112. The General Manager also writes: "The export trade continues promising. South African coal has again obtained a footing in the Eastern markets. A fair amount of coal was also shipped to Europe."

What the Mines Buy.

THE SOUTH AFRICAN MERCHANT AND FARMER'S BEST MARKET.

THE RAND'S HUGE PURCHASES.

The following highly valuable statistics as to stores consumed by mines of the Union during the year 1922 are abstracted from the report of the Government Mining Engineer recently issued:—

Classification.	Witwatersrand Gold Mines. Weight or Quantity.	Witwatersrand Gold Mines. Value.	All Mines of Union of South Africa. South African Products. Weight or Quantity.	All Mines of Union of South Africa. South African Products. Value.	All Mines of Union of South Africa. Total (including S.A. Products.) Weight or Quantity.	All Mines of Union of South Africa. Total (including S.A. Products.) Value.
		£		£		£
Belting (including Laces and fasteners)	—	113,439	—	2,565	—	130,883
Candles .. .. Lb.	4,935,968	**160,876**	5,930,722	192,648	6,115,949	199,001
Carbide .. .. Lb.	4,835,601	**79,752**	4,402,731	72,985	5,206,613	86,448
Castings—Iron	—	**110,327**		128,431	—	128,479
Cement Bags .. No.	124,388	**55,624**	168,147	77,768	168,147	77,768
Chemicals, Assay & Smelting Requisites	—	**94,068**	—	65,682	—	107,871
Cloth, Canvas, Blanketting, Matting, etc.	—	24,382	—	2,225	—	30,819
Coal—						
Smithy .. .. Tons	11,643	19,060	13,822	21,281	13,831	21,340
Steam .. .. Tons	1,103,319	**689,586**	1,314,872	830,384	1,314,878	830,439
Other.. .. .. Tons	23,912	20,102	37,364	26,193	37,364	26,193
Duff & Dross .. Tons	122,094	63,592	306,015	88,480	306,015	88,480
Compressed Air (purchased) ..	—	351,499	—	351,544		351,544
Cyanide.. .. .. Lb.	4,941,446	**285,830**	—		5,315,593	308,681
Electrical Machinery	—	**238,508**	—	1,663	—	317,860
Electrical Machinery Spares & Fittings	—	76,303	—	5,863	—	105,618
Electric Power & Light (purchased)	—	1,157,119	—	1,179,856	—	1,179,856
Explosives—						
Blasting Gelatine .. Cases	25,040	90,438	26,324	95,210	26,324	95,210
Gelignite & Gelatine Dynamite .. Cases	422,412	**1,084,783**	445,091	1,148,730	445,091	1,148,730
Other Explosives .. Cases	13,912	38,167	19,828	58,082	19,948	58,502
Detonators	—	50,777	—	49,949		69,913
Safety Fuse	—	178,935			—	222,860
Lighting Torches (Tyisa Sticks)	—	9,796	—	10,363	—	10,445
Fodder for Stables—						
Bran, Chaff, Mealies, Forage, etc.	—	22,212	—	43,653	—	43,653
Foods, etc., (supplied **free** to coloured Labourers)—						
Beans .. .. Lb.	5,605,499	33,206	6,914,765	41,466	6,924,065	41,521
Meal (Mealie, Kaffir Corn, etc.) .. .. Bags	508,372	**331,738**	723,935	470,148	723,935	470,148
Malt & Cereals for Beer ..	—	27,403	—	34,329		34,329
Meat .. .. .. Lb.	31,223,800	**384,261**	37,661,559	486,904	37,661,559	486,904
Groceries, Coffee, Sugar, Oil, Ghee, Molasses, etc. ..	—	35,338		39,332	—	46,877
Sundry Food, including Bread	—	**146,248**		174,615		175,628
Vegetables	—	55,711		69,797		69,797
Hand Tools (Picks, Shovels, Hammers, etc.)	—	**100,742**	—	6,097	—	125,958
Hose Fittings	—	25,281	—	14,980	—	26,536
Hosing (Steam, Suction, Rock-Drill, etc.)	—	66,786	—	12,649		71,977

[illegible]

Classification	Witwatersrand Gold Mines: Weight or Quantity	Witwatersrand Gold Mines: Value	All Mines of Union of South Africa: South African Products: Weight or Quantity	All Mines of Union of South Africa: South African Products: Value	All Mines of Union of South Africa: Total (including S.A. Products): Weight or Quantity	All Mines of Union of South Africa: Total (including S.A. Products): Value
		£		£		£
Hospital and Ambulance Requisites (including Medicines)		33,951		7,158	—	43,206
Iron						
Bar & Angle .. Lb.	4,580,711	57,608	2,795,245	31,236	5,584,078	71,300
Galvanized	—	11,784	—	—	—	19,750
Ironmongery						
Bolts, Nuts, Washers & Rivets .. Lb.	2,235,929	48,071	390,861	7,701	2,986,550	65,427
Lime—White .. .. Bags	413,956	**114,291**	438,603	123,408	438,603	123,408
Lubricants—Oil .. Gals	348,874	82,609	4,582	1,140	566,740	131,408
Grease & Tallows ..	—	75,586		45,591	—	100,118
Machinery & Machine Tools ..	—	**442,895**	—	30,550		676,709
Machinery Spares, other than Electrical	—	**227,295**	—	50,476	—	301,991
Pipes & Pipe Fittings ..	—	**325,207**	—	20,509	—	367,898
Rails, Crossings, Sleepers, etc.	—	**184,907**	—	113,843	—	268,167
Rock-Drill Spares	—	**278,831**	—	83,155	—	286,876
Ropes—Wire	—	**212,375**	—	19,183	—	246,255
Shoes & Dies .. .. Lb.	9,171,942	**119,268**	6,101,254	68,608	9,366,933	122,921
Stationary & Printing ..	—	60,126	—	59,052	—	76,233
Steel						
Bar, Tool, Cast, etc. Lb.	859,823	19,540	192,331	2,610	1,171,185	26,549
Sheet .. .. Lb.	7,689,459	75,809	8,473	121	8,758,329	89,309
Hand-Drill .. .. Lb.	1,990,361	38,400			2,087,262	41,068
Rock-Drill .. .. Lb.	6,714,139	**212,238**			6,888,573	219,381
Timber—						
Deals	—	71,994	—	1,371		90,816
Oregon, Pitch Pine, etc. ..	—	175,506	—	17,809		196,253
Mining Poles & Lagging ..	—	**448,969**	—	486,299		488,546
Other	—	70,294	—	51,550	—	75,805
Transport, Railage, etc. ..	—	40,017	—	56,641	—	56,641
Tube Mill Requisites						
Liners	—	58,819	—	55,572	—	61,629
Trucks & Spares	—	**114,152**	—	31,309	—	156,298
Water (purchased)	—	156,281	—	171,014	—	171,014
Zinc & Zinc Discs .. Lb.	3,641,328	**81,724**			3,871,696	86,495
Sundry Articles not specified above	—	68,940	—	51,456	—	144,151

In Lighter Vein.

SUNDAY WORKING IN KRUGER'S DAYS.

A correspondent of the *Cape Times*, whose identity will be no secret to most of our readers, supplies the following characteristic reminiscence of the late President Kruger: "In the early 'nineties I was chairman of the Robinson Gold Mining Co., when the manager of the mine came to me with a summons from the Government calling upon him to desist working the mine on the Sabbath. I took the summons to Mr. Van de Merwe, the Gold Commissioner, and explained that, as I was the chairman and head of the company, the summons should be served upon me, but before another service was made I asked him if he would await my return from Pretoria. I would see the President at once, and endeavour to get the Government to permit the batteries to work on Sundays. Van de Merwe was very sympathetic and nice about it, and agreed to wait. I wired Mr. Nellmapius to meet me, and together we saw the President. Mrs. Kruger happened to be in the room when we came, and she remained listening to what we had to say. After I had explained the object of my visit, the President said that many years ago he took part in a trek to Angola in search of the land of milk and honey. His party suffered great hardships in crossing the great desert, and they had to turn back. One Sunday they emerged on a fine grassy tableland, with lots of game about. For months they had not tasted fresh meat, and there stood a herd of wildebeeste close to the wagon. His wife said:

"Paul, take your gun and shoot one of those beasts. Our people sorely need fresh food. Tho' it is the Sabbath, it is the Lord's will." With that she handed him his gun. He took the rifle, which was an old flintlock weapon, and aimed at a wildebeeste; there was a flash in the pan, but the gun did not go off. "You see," he said to his wife, "it is not the Lord's will," and he was in the act of returning the gun to her when the charge went off, and in doing so killed the biggest and fattest beast in the herd. Nellmapius and I could not unravel the parable. So we followed Mrs. Kruger, who went into the kitchen, and we asked her what the President meant. "You foolish people," she replied, "can't you see the President is head of the Church; he cannot officially sanction Sunday working." We had to be content with the parable. The summons was not put into force."

The Position at the Modder East.

SELECTIVE MINING POLICY—REPAYING DEBT—DEVELOPING IN PROMISING DIRECTIONS.

The annual report of the Modder East issued this week reviews the working policy of the company as already announced. The mining policy adopted by the company in September last has been to concentrate stoping operations on the richer blocks of ore contained in No. 1 and No. 2 shaft sections, and to confine development to exploratory work in the most promising areas of the property, the objects of this policy being to extinguish the company's debt as rapidly as possible, and simultaneously to endeavour to prove an extension of the good values already located. Owing to the higher grade of ore milled, the larger tonnage crushed and a substantial reduction in working costs during the year, equal to an average of 11s. 6d. per ton milled, a greatly increased profit of £262,252 was obtained, notwithstanding the fall in the price of gold. The results of development operations, on the other hand, particularly in No. 1 shaft section, were most disappointing. The footage accomplished totalled 10,088 feet, but few payable stretches were encountered, and these were found to be disconnected and limited to short distances. Only 70,000 tons of payable ore were developed during the year. In consequence of the small payable tonnage developed and the depletion of high-grade ore during the period under review, the ore reserve, as recalculated per 30th June, 1922, shows a decrease of 352,100 tons, with a decline in average value of .4 dwt. per ton. The policy of maintaining as high a rate of profits as practicable and proceeding simultaneously with exploratory development at the most promising points in the mine will be continued during the current year, but the decline in the value of the ore reserve will be reflected in a decrease of revenue.

The following tables show the main features of the year's work, in comparison with results for the previous two years:—

	Year ended 30th June, 1921	Year ended 30th June, 1922	Year ended 30th June 1923
Tonnage milled	297,800	237,100	321,300
Working costs per ton milled	30s. 5d.	37s. 2d.	25s. 8d.
Revenue per ton at standard price of gold ...	33s. 7d.	33s. 11d.	40s. 3d.
Profit per ton at standard price of gold ...	3s. 2d.	*3s. 3d.	14s. 7d.
Working profit at standard price of gold	£46,630	*£38,570	£234,506
Additional revenue due to gold being above standard price	£163,160	£76,254	£27,746
Total working profit ..	£209,790	£37,684	£262,252
Total working profit per ton milled	14s. 1d.	3s. 2d.	16s. 4d.
Development footage ...	20,270	14,778	10,088
Ore reserve tonnage ...	1,611,700	1,962,800	1,610,700
Average value of ore reserves — dwts. per ton	7.7	7.1	6.7

*Less.

In the course of their annual report the consulting engineers write:—There has been an increase of 1.52 dwts. in the yield per ton, and a notable decrease of 11s. 6d. in the working costs, as compared with the previous year's figures. These improvements and the higher tonnages milled have, in spite of the fall of 12s. 5d. per ounce in the price realised for gold, resulted in the earning of greatly increased profits. Comparisons with results for the previous year are, of course, vitiated by the effect of the 1922 strike, but after allowing for this, it is evident that a gratifying improvement in efficiency has been effected. In accordance with the policy laid down early in the year, all work was stopped at No. 3 shaft, mining has been concentrated, in so far as possible, on the richer blocks of No. 1 and No. 2 shaft sections, and development has been restricted to the most promising points; while every effort has been made to keep expenditure at a minimum consistent with good work and proper maintenance of plant. Costs have been affected to the extent of 10d. per ton by reductions in railage charges and rental of the Apex plant. The smaller amount of development footage has also been an appreciable factor in the decrease in costs. The mill was kept fully supplied, and nearly 90 per cent. of the tonnage was obtained from stopes. A high rate of sorting was maintained, and the efforts made to keep stoping widths at a minimum were very successful, more especially during the latter months of the year. In January considerable difficulty was experienced with caving of the hanging wall in a number of the larger stopes in the No. 1 shaft section, probably an after effect of the flooding of this section during the strike. The stoping programme was thereby upset, and in consequence the monthly profits were greatly reduced. No ore was lost, but the rate of mining of some of the richer blocks was retarded. Development footage was lower by 4,690 feet than for the previous year and totalled only half that for 1921. Although most of the work was carried out on the dip of the No. 1 shaft section, where prospects were the most promising, the values disclosed were very disappointing, such payable stretches as were found being mostly short and disconnected. The meagre total of 70,000 tons represents the payable ore developed by the year's operations. In the latter part of the year, owing to the discouraging results in the bottom of No. 1 shaft section, development was recommenced on a limited scale in the No. 2 section, and a little encouragement met with. The recalculation of the ore reserve as at 30th June, 1923, gives the following on a pay limit of 5.0 dwts.:—1,610,700 tons of an average value of 6.7 dwts. on an estimated stoping width of 55 inches. The tonnage is less by 352,100 dwts., and the value is down by 0.4 dwt., as compared with the previous estimate. Of the above total, the ore of a value of 6.0 dwts. and over amounts to 986,800 tons, averaging 7.3 dwts., which is 123,000 tons and 1.0 dwt. below last year's figures for similar class ore. The decrease in tonnage is due to the poor results from development, and the fall in value is the direct result of the policy of concentration on the richer blocks for the purpose of earning profits as rapidly as possible, expressly to pay off the debenture debt. It will be necessary to continue this policy throughout the current year, but, owing to the diminishing tonnage of high-grade ore, profits will be on a more moderate scale than the past year's average. Development work should be continued on broad lines and on such scale as circumstances will permit, and where encouraging values are encountered more intensive development should be done.

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TOPICS OF THE WEEK.

The Crown Diamond Meeting.

The very lucid and interesting speech made by Mr. T. Marks at the annual meeting of Crown Diamonds will be found fully reported in this issue. The usual delays were experienced in remodelling and re-organising the plant, and the mine is only now beginning to get into its stride. Moreover, the decision to electrify the plant necessitated a complete alteration of the original plans and the placing of orders oversea for a considerable portion of the new machinery. Late deliveries of imported material also contributed to retard the completion of the work. As regards the mine itself, further tests made confirm the good results of the previous tests made, with the added advantage that an increase of 25 claims in the mine area has been proved at deeper levels. The Chairman emphasised the fact that a great deal of work had been done during the year in getting the open workings ready for production on a big scale, the new lay-out having been designed to handle 50,000 loads per month, and the engineers felt confident that this rate of output could be well maintained by the plant, and that the manner in which the mine had been opened out should assure a continuous supply of blue ground up to this capacity. Further, to provide against any unforeseen contingencies causing stoppages of work in the mine, some 68,769 loads of blue ground had been dumped on the surface so that washing could at all times proceed uninterruptedly. The south-western portion of the mine had been freed from reef and hardibank, no less than 179,460 loads having been recently removed. Three haulages had been installed in order to deal adequately with the haulage of blue and to handle waste rock and reef as might be required. The Chairman described the satisfactory financial arrangements made, and in conclusion stated: "It may be said as a result that we own property which is now thoroughly equipped with a most modern plant second to none in the country, and that the mine has been brought into better condition than ever before, and prepared for several years' working from the open mine. Moreover the information we have gained from the exploratory work done at the deeper levels augurs well for the future. We therefore stand in a far more advantageous position than we did before the recent reconstruction was carried through. We have now made a new start with an excellent plant and a mine which is, as your consulting engineer points out, in better shape than ever before." Another fact of importance mentioned was that the diamonds so far recovered during the current month were said by the manager to be superior in average quality to those already received. "I can only say," declared Mr. Marks, "that from the preliminary results obtained we have every reason to be satisfied, and I look forward from now on to a steady improvement in the number of loads treated and also in the carats recovered." It is to be hoped that these hopes will prove justified and that the mine will now at last come into its own.

We understand that the returns for the first half of September up to and inclusive of the 15th inst. showed that from 15,728 loads washed a recovery of 1,695¼ carats was obtained, which is equal to 10.72 carats per 100 loads. This return, it will be seen, is well up to expectations, for what is in reality the first fortnight's running, and steps are now being taken to increase production.

The Diamond Industry.

After nearly three years of stagnation in the diamond industry it is good to read in the annual report of the Inspector of Mines of the Cape and O.F.S. that "the diamond trade during the year underwent no appreciable change, but from the beginning of 1923 the outlook has become brighter. It is improbable that any rise in the price of diamonds will take place, but the demand for diamonds is increasing owing to the supply from other than legitimate sources being exhausted. The large producers will now be able to restart and supply the demand." The returns show that from the earliest date of existing records down to the end of last year, the total value of the diamond output reaches the globular figure of £222,167,219. Of this two hundred and twenty-two millions the Cape was the main producer, the amount being divided up as follows:—Cape, £170,893,131; Transvaal, £31,426,595; O.F.S., £19,847,493. There are no diamond mines or diggings in Natal. The output in 1921 and 1922 is shown in the report as follows:-

	Quantity. (metric carats)	Value £
1921	828,035.51	3,103,448
1922	669,559.44	2,266,631

The value is that estimated at the mine.

The production of the mines was 31 per cent. less than in the previous year, and the average price per carat 25s. 6d. lower. Alluvial stones, however, showed an increase of 52,371 carats, or 26 per cent., and the price per carat improved by 15s. 3d. In 1921 the diamond mines and alluvial fields produced more carats than were sold, and in 1922 sold more than were produced. In 1921 metric carats sold reached 544,168.12, and value £2,161,796, and in 1922 metric carats sold reached 1,231,373.77, and value £3,765,601. At the end of 1922 there were ten producing mines, and the number of whites employed thereon was 1,826 and natives and other coloured persons 3,822. These figures show a reduction as against 1921 of four mines (which were non-producing), 873 whites and 3,888 natives and coloured persons. The alluvial diamond diggings have a different story to relate. They employed 5,191 whites and 15,834 natives and coloureds in 1922, as compared with 3,962 and 12,885 respectively in 1921, but the grand total [illegible] employed in the mine and on the [illegible] 1922 [illegible] the previous year. [illegible] it is interesting to read in the Engineer's report that [illegible] individuals [illegible] It may only be looked upon as a temporary [illegible] They might with equal [illegible] These remarks do not apply to the [illegible] figures [illegible]

Notes & News.

"MINING JOURNAL" SPECIAL ANNOUNCEMENTS.

MINING JOURNAL YEAR BOOK, 1923-24.

BRITISH EMPIRE EXHIBITION NUMBER.

The 1923-24 Year Book, to be published before the end of the current year, is now in course of preparation. It promises to surpass in the scope and thoroughness of its survey the edition now on sale, for which nothing but unstinted praise has been expressed.

The 1923-24 edition will be a special British Empire Exhibition number, and as such will be an invaluable advertising and publicity medium.

* * *

Basutcland Border Oils.

A [illegible] of this company has been registered at Pretoria, and applications for shares are, it is understood, now being invited. The property [illegible] is the farm [illegible] Ltd.

* * *

Ferreira Deep Dividend.

The directors of the Ferreira Deep, Ltd., have declared a dividend of [illegible] per share for the period ended September 30.

* * *

Ca' Canny Miners' Reward.

A [illegible] from Wellington, New Zealand, states that all [illegible] closed down owing to the [illegible] policy which has made the [illegible] The State mines, however, are not affected.

* * *

Florida Consolidated Mines.

Under the name of Florida Consolidated Mines, Ltd., a company has been registered with a capital of £10,000 to [illegible] Another [illegible] Ltd., [illegible] with a capital of £10,000.

* * *

Cape Cement and Competition.

In commenting on the speech made by Mr. J. L. [illegible] annual meeting of the Cape Portland Cement [illegible] of imported cement [illegible] quoted by Mr. [illegible] concluding sentences [illegible] hope that [illegible] the carriage [illegible] miles [illegible] for 1s. 3d. per [illegible] Board of Trade and Industry doing?

The Asbestos Industry.

South African asbestos continues to forge ahead and an English company, the [illegible] Asbestos Mines, Ltd., is operating in the [illegible] district. Mr. L. Charleston [illegible] of Johannesburg, is the chairman. Other asbestos properties in the same district have recently been acquired by Messrs. [illegible] & Co., of E. and T. Buildings, Johannesburg.

* * *

A Messina Record.

Last month's production of copper ore from Messina mine constituted a record, with 18,523 long tons, with an average assay value of 3·27 per cent. From Vogelenzang mine, 2,30[illegible] tons of an assay value of 3·76 per cent. were produced. 13,600 long tons were treated in the mills which extracted [illegible] per cent. of available copper. The smelters, which [illegible] towards the end of the month, produced 20[illegible] tons of blister [illegible] 516 tons of these and concentrates were shipped away during the month. The daily average of white employees is 129, an increase of three on last month's average. The native labour force also shows an increase and amounts to a daily average of 1,773. Development at the 7[illegible] feet level at Vogelenzang shows the presence of exceptionally satisfactory ore. Development has been [illegible] on the 18th level in the Messina [illegible]

* * *

South African-Born Miners.

The *Midland News* publishes the following telegram from the Secretary for Mines in response to its telegraphic request for a statement regarding the attack made by Mr. J. H. Munnik, M.L.A., on the Government Mining Engineer:—"Statistics given in the Government Engineer's report show that the percentage of South African-born miners decreased from 51·5 per cent. in 1921 to 48·6 per cent. in 1922, while the percentage of miners born in the United Kingdom increased from 42·5 per cent. to 45·6. In a footnote the Government Mining Engineer comments on these figures as follow: 'The comparison between 1922 and 1921 shows clearly that in the reorganisation of work on the Witwatersrand the South African-born miner suffered most in retrenchment, being no doubt less experienced and efficient than his colleague from oversea.' The report, like other departmental reports, is one made by an official to the Government, stating facts for its information, and it will be seen that the Government Mining Engnieer does not state what is attributed to him. There are still a larger number of South African-born employees than those born in the United Kingdom, the former being 10,700 and the latter 10,077, but retrenchment has apparently affected the former to a greater extent because the latter are largely highly skilled."

* * *

Minerals Separation, Ltd., in South Africa.

The report of the directors of Minerals Separation, Ltd., for the year 1922 states: "The company's expenditure has exceeded the income by £18,812. This is due to the fact that large [illegible] for the use of our coal-cleaning and briquetting processes and of our new ore reduction process are not yet in operation, while the situation as regards the metal industries generally has shown very little improvement. Considerable progress, however, has been made during the year, and especially in regard to our gold processes very valuable improvements have been perfected. In South Africa our business is steadily growing. Before the end of the current year results of the working of our processes at the [illegible] Deep Levels, Ltd., will be available, and we are confident that the results obtained will induce other companies to take advantage of the saving of gold which the adoption of our processes will afford. Copper fields of great value are being opened up under our supervision in Northern Rhodesia, in the development of the mineral resources of which country our company has a large interest. The ores on these fields are of that class referred to in our last report as suitable for treatment by our new ore reduction process, and the results of the trial of this process, which is being conducted at Bwana M'Kubwa, are expected in the course of next month."

The Crown Diamond Mining & Exploration Co., Ltd.

HOW THE NEW PLANT IS WORKING—SATISFACTORY POSITION AT THE MINE.

At the thirteenth annual general meeting of the Crown Diamond Mining and Exploration Company, Ltd., held on the 14th inst. at Lewis and Marks Building, Johannesburg, 540,122 shares were represented in person or by proxy out of an issued capital of 813,332

Chairman's Speech.

The Chairman (Mr. T. Marks) said:

The directors' report and audited statements of account for the financial year to 31st December, 1922, are before you. At the last annual meeting you were informed of the results of the exploratory work done in your mine, and of the improved prospects. You were also advised of the scheme formulated by the directors for the reconstruction of the company to provide for the re-equipment of the mine to deal with large outputs at low costs, and to enable the writing off of past losses amounting to £137,990, and the liquidation of the debt amounting at date of reconstruction to £80,000. At the special general meeting which followed this scheme was adopted in its entirety. It now devolves upon me to report to you the progress which has been made, and to say something as to our future prospects.

The New Installation.

Firstly, as regards the new equipment. I am glad to be able to say that this has been completed. At the outset plans were prepared for the rearrangement of the old steam-driven plant with the addition of such extra pans as were needed to bring the plant up to the required capacity of 50,000 loads per month. It was found, however, that the use of a direct steam drive would tie the engineers to an awkward arrangement of the different units of the plant. The directors, therefore, decided upon the advice of our technical experts to instal an electrical equipment and adopt motor driving for the whole plant. This has entailed additional expenditure and time, but there is no doubt that it will prove much more advantageous in the long run and provide for more efficient and economical working.

The new installation is designed for the direct treatment of mine ground, and so obviates the delay and expense of flooring blue for " weathering " before it can be passed through the washing machines. Standard washing pans have been provided. These are served by two sets of four foot rolls, two sets of six foot rolls, and two Hadfield gyratory crushers, which will give ample crushing capacity to keep the eight pans fully employed. The conveyor plant has been greatly improved and endless belts of ample capacity have been installed in place of the old system of bucket elevators, which, in the past, have been responsible for much delay and expense. It was hoped that the plant would have been completed about the end of May last or early in June, but, as is generally the case, especially where the reconstruction of old plants is concerned, unforeseen setbacks occurred. Moreover, unusual difficulty has been experienced in recent months in carrying out the work of preparing the mine owing to the scarcity of native labour, but this has now been overcome and the native complement is well up to present requirements.

The decision to electrify the plant necessitated a complete remodelling of the original plans and the placing of orders oversea for a considerable portion of the new machinery. Late deliveries of imported material also contributed to retard the completion of the work. The additional cost of electrifying the plant and the unavoidable delays referred to have naturally resulted in the original estimates of cost being exceeded. There was also the added cost of exploration, shaft sinking and the heavy expenditure involved in removing reef and hardibank from the mine and stripping overburden from the edge of the workings, and I will presently inform you how this further expenditure has been met.

Position of the Mine.

Now, with regard to the position of the mine itself. At our last meeting you received detailed particulars of the results of tests carried out at the 160, 440 and 540 foot levels, and which averaged 14.98 carats per 100 loads. Two further tests at the 540 foot level were made in October and December last as follows:—(1) From the south and central areas of this level 3,944 loads washed yielded 694 carats of diamonds, equal to 17.59 carats per 100 loads. (2) From the north side of the 540 foot level 2,830 loads washed yielded 581 carats, equal to 20.53 carats per 100 loads. These tests, therefore, only serve to confirm the good results of the previous tests made, with the added advantage that an increase of 25 claims in the mine area has been proved at these exploratory levels. A great deal of work has been done during the year in getting the open workings ready for production on a big scale, the new layout having been designed, as you know, to handle 50,000 loads per month, and our engineers feel confident that this rate of output can be well maintained by the plant, and that the manner in which the mine has been opened out should assure a continuous supply of blue ground up to this capacity. Further, to provide against any unforeseen contingencies causing stoppage of work in the mine, some 68,769 loads of blue ground have been dumped on the surface so that washing can at all times proceed uninterruptedly. The south-western portion of the mine has been freed from reef and hardibank, no less than 179,160 loads having been recently removed. Three haulages have been installed in order to adequately deal with the haulage of blue and to handle the waste rock and reef as may be required. The stripping of overburden from the edge of the pipe is receiving special attention, and with the plentiful supply of native labour which is now available, it is anticipated will be rapidly proceeded with.

I should like to especially emphasise the point to which I have just referred, and which is contained in the consulting engineer's report as to the additional area of the pipe at the deeper levels in the west end of the mine, where, owing to expansion of the pipe area, it is estimated that we have an addition of about 25 claims. You will appreciate the importance of this development inasmuch as judging from past work this is adjacent to one of the best portions of the mine which yielded some very fine stones in the past. In December, 1919, for instance, 900 carats of diamonds were recovered from this section, and included stones of 53½, 47¼, 18½ and 9¼ carats weight of the finest quality, which individual stones were sold for £3,594, £1,890, £1,387 and £462 respectively. Now that this part of the mine has been cleared of debris, and the mass of hardibank which rested upon it and prevented further working has been removed, it is possible to again haul blue in large quantities from this area, and there should be no reason why further diamonds of equal size and quality should not be found. With regard to the accounts before you, I think they are self-explanatory, and are adequately dealt with in the directors' report.

New Shares and a Temporary Loan.

The issue of new shares under the reconstruction scheme referred to in the directors' report and adopted in general meeting on 30th June, 1922, yielded a sum of £50,000, but, as I have already said, this has proved insufficient to carry out the whole of the work referred to and provide working capital until the revenue producing stage is reached. A further sum was required. The directors, therefore, in order to ensure continuity of the work, and so avoid the extra expense which a break in operations would have entailed, decided under authority of the company's Articles of Association, to at once raise a temporary loan of £25,000 by the issue of first mortgage debentures. This was successfully accomplished. The terms of this loan are 7 per cent interest per annum and payment of 10 per cent underwriting commission. The debentures run for a period of one year only from 15th July 1923, and it is hoped that the mining results will cause options to be exercised on a sufficient of the reserve shares during that period to enable repayment of the debentures. I think you will agree with me that it was absolutely essential to make this additional financial provision without delay, as under the circumstances there was no alternative course that could have been adopted.

It may be said as a result that we own property which is now thoroughly equipped with a most modern plant second to none in the country, and that the mine has been brought into better condition than ever before and prepared for several years' working from the open mine.

Moreover, the information we have gained from the exploratory work done at the deeper levels augurs well for the future.

We therefore stand in a far more advantageous position than we did before the recent reconstruction was carried through. We have now made a new start with an excellent plant and a mine which is, as your consulting engineer points out, in better shape than ever before.

Recent Results.

The new plant was given a trial run with blue ground on the 13th of August. As is not unusual in starting new plant, certain adjustments to the gear were found necessary, and for some days it was evident very imperfect recoveries of diamonds were made, although part of the ground put through for the trial was of inferior grade. During this trial some 2,989 loads of ground were treated and yielded 159 carats. After the adjustments to the washing plant had been made, washing was recommenced on the 27th August with improving results, and from then to the 31st August 3,473 loads were washed, yielding 313 carats of good quality stones. For the present month to the 11th inst., 10,560 loads have been washed, yielding 1,108¼ carats, equal to approximately 10½ carats per 100 loads.

You will appreciate that during the early stages it takes a little time to tune up the plant and for the employees to become accustomed to it and to fit into their jobs with proper efficiency. This is particularly the case with the native workers, who take a considerable time to train to get the best results.

From the 1st September the output has been speeded up, and I am confident that the standard of efficiency will increase until the full capacity of output of 50,000 loads per month has been reached. On Wednesday 1,480 loads were washed.

With regard to the diamonds recovered, shareholders will naturally be anxious to have some idea of their value. Although a fully representative parcel of stones has not yet been obtained, the 472 carats recovered to the end of August have been received and valued by an independent valuator at 135s. 3d. per carat and have been sold at this figure. I would like to emphasise the point that this small parcel did not contain any specially good stones, the largest being only one of 7 carats, one of 5 carats and one of 4½ carats, and from past history of the mine it is confidently anticipated that in a full month's production larger stones will be found, which will increase the average value per carat.

The diamonds so far recovered during the current month are said, by the manager, to be superior in average quality to those already received.

Now that the plant is in operation, the management are able to devote their attention to other matters of organisation, and adequate steps are being taken to prevent, so far as is humanly possible, any possibility of theft of diamonds.

In conclusion, I can only say that from the preliminary results obtained we have every reason to be satisfied, and I look forward from now on to a steady improvement in the number of loads treated and also in the carats recovered.

Our Mineral Exports.

According to the latest report of the General Manager of the S.A.R., during July 546,568 lbs. of tin ore were forwarded to Durban from Warmbaths, Potgietersrust, and Carolina for shipment, a very gratifying increase of 357,658 lbs. compared with the corresponding month of last year. 694 tons of smelted and unsmelted copper were despatched during July from Messina to Delagoa Bay for export. 277 tons of fluor-spar and 15 tons of vanadium were railed from Ottoshoop to Table Bay during July for shipment to America. A consignment of 567 tons of asbestos was railed from Prieska for shipment through Table Bay during July. 5,000 tons of nitrate of soda and 4,400 tons of sulphur were landed at Delagoa Bay during August, for the Transvaal.

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Annual Capacity . . . . 3,500 Locomotives

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The Week in the Sharemarket.

HOLIDAYS INTERVENE—TONE HEALTHY— IMPROVING OUTLOOK.

The business week has been broken by the advent of the Jewish holidays. The public and the professional dealers were alike indisposed to enter upon new business. It is probable that a more settled feeling will prevail in the coming week. On account of the holidays the volume of business has been small. Some features of interest have, however, revealed themselves. The New Modder report, issued during the week, has been most encouraging and the position of this mine is better than ever it has been. As a speculative counter the shares are ceasing to attract much attention, but for investment purposes they are undoubtedly gaining in favour. The Modder East report, also to hand, is far from satisfactory. Nourse Mines have been bought by well-informed people, and it is said that development is being pushed in the highly payable zone in the vicinity of the South Nourse shaft. High values are being encountered, and it is said 16 dwts. over a stoping width are recorded. This, coupled with the recent economies achieved on this mine, should considerably alter the position of the shares. The market expects Durban Deeps to improve, also Mining Estates. Crown Mines, in view of the excellent profits being earned, and the general satisfactory position at the mine, are considered cheap to-day. Barnato stocks have not been prominent. There was some slight liquidation of Randfonteins, but the stock finished firm. New States continue to be a difficult market. States have had only small business, but at firm prices. Van Ryn Deeps have been out of fashion, but will have their turn of interest shortly. Goldfields stocks, notably Robinson Deep "B" shares, have been the medium of large business. This stock is being well bought for investment. The "A" shares are still said to have a few shillings capital improvement in them, besides the undoubted safe return as an investment. Simmer and Jacks have slightly revived, and this stock will probably be bought on the strength of improving profits. Union Corporation stocks revived under the lead of Modder Deep. The occurrence of Black Reef on this property in pay quantities has no doubt been responsible for the improvement. It is said that a considerable addition to the life of the mine will be possible, from this source. Gedulds have been firm. General Mining stocks have chiefly featured Transvaal Silvers. Active development to reach deeper levels is now in process, and as the company is earning monthly profits, the possibility of a market in the shares is attracting attention. The Anglo-American Group have nearly all declined. Profit taking may to some extent be responsible for this position, the public having done very well lately in this Group. It is probable that a forward movement will again be evident, on merit, and that these stocks will be the medium of large business. The Bailey Group stocks have been active in sympathy with Rhodesian interests. S.A. Townships have advanced on the improvement in their holdings. Industrials have been neglected. Cements recorded a little business, but the more active gold shares have attracted attention from this class of share. The diamond market has been dull. It is said that the sales of gems are quite satisfactory, but in spite of this, shares are receiving little attention. Consolidated diamonds have been a very quiet market. If it is the case that gems are readily sold this should be a time to buy Consolidated Diamonds. West Ends were supported, and rose in price. New Farms may shortly pay a dividend. The investment market has been very quiet. Holders of the new 5 per cent. Loans are anxious to deal, but business cannot yet be recorded. National Banks are the turn harder, and Reserve Banks have been bought in small numbers. It is expected that the market will resume on a better level in the coming week. The tone is healthy, and money plentiful. The shortage of native labour, which restricted some of the mines during the past month, is being overcome, and it is probable that the returns from the mines for the remaining months of the year will be good. Prevailing conditions generally favour a higher level of prices.

	Fri. 14th.	Sat. 15th.	Mon. 17th.	Tues. 18th.	Wed 19th.
Anglo-American Corp.	23 9*	24 0	24 3	24 3*	24 0*
Apex Mines	5 6*		5 6*	5 6	5 6*
Aurora Wests	6 3*	6 3*	6 3*	6 3	
Brakpan Mines	66 3*	67 0	66 9*	67 0*	66 3
Brick and Potteries	4 9*	4 6*	4 6*		4 0*
British South Africa	12 6	13 6			13 0*
Bushveld Tins		0 4*	0 4		
Cinderella Consolidated	3 0+	2 6*	2 6*		
City and Suburbans	2 11	2 11*	2 11*	2 11*	
City Deeps	56 3*	56 9	56 9*	56 9*	56 8
Clydesdale Collieries	17 3+	15 0*	15 3*	15 3*	15 3*
Consolidated Diamonds	18 6*	18 9	18 7	18 7*	18 7*
Consolidated Main Reefs	9 0*	9 0*	9 6*	9 0*	9 0*
Coronation Freeholds	0 6*	0 6*	0 8*	0 8*	
Coronation Syndicates	5 7*	5 7*	5 9	5 9*	5 9*
Crown Diamonds	6 1	6 4	6 3	6 2	6 1
Crown Mines	52 9*	52 9*	53 0*	52 9	52 6
Daggafontein Mines	2 0*	2 0*	2 1*	2 0*	2 0*
Durban Rood. Deeps	16 7*	16 6*	16 9*	17 0	16 10*
East Rand Coals	1 0*	1 6*	1 0*	1 0*	1 0*
East Rand Deeps	0 7*	0 7*	0 7*	0 7*	0 7*
East Rand Props	5 0	5 3*	5 6*	5 3*	5 0*
Eastern Golds	0 4*	0 4*	0 4*	0 4*	0 4*
Ferreira Deeps	6 0*	6 0*	6 0*	6 0*	6 0*
Frank Smith Diamonds	3 2+	3 3+	3 3+	3 0	2 8*
Geduld Props.	61 0*	61 6	61 6*	61 3*	61 3*
Geldenhuis Deeps	3 9				
Glynn's Lydenburg	15 0*		15 0+	15 0*	
Government Areas	115 0*	115 0*	114 9	115 0*	115 0
Lace Props.	10 0*	10 3+	9 6*	10 0	10 6
Langlaagte Estates	23 6*	23 6*	23 10½	23 7½	23 6
Leeuwpoort Tins	4 9*	5 1	4 11	4 10*	4 8*
Luipaardsvlei Estates	3 9*	3 9*			
Lydenburg Farms	2 6	2 6*	2 6*		
Middelvlei Estates	1 0*	1 1*	1 2*	1 2*	1 3
Modder B.'s	23 9*	23 9	23 9*	23 9	23 3
Modder Deeps ..	40 3	40 3*	40 1½	40 6	40 9*
Modder Easts	5 3*	5 3*	5 6	5 3*	5 3*
Natal Navigation Colls.	28 0*	28 0	28 0*	28 0*	29 0+
National Banks ...	125 0		120 0*	122 6	
New Eland Diamonds	35 0*	35 0	35 0*	35 0*	
New Era Cons. ...	7 6*	7 *	7 6*	7 6*	7 6*
New Geduld Deeps	0 6*	0 6*	0 6*	0 6	0 6*
New Kleinfonteins			4 9*	4 9*	4 6*
New Modderfontein	82 3*	82 6	82 3	82 3	83 3
New State Mines	31 9*	32 0*	32 6*	32 0	32 3
Nigels	6 6+		6 6+	6 6+	6 6+
Nourse Mines	14 4*	14 6*	14 9	15 0	15 3
Pretoria Cements	37 3*	37 6*	37 6*	37 3*	37 0*
Rand Collieries	0 6*	0 6*		0 6*	0 6*
Rand Mines	1 1*	1 1*	1 1*	1 2*	1 2*
Randfontein Centrals	12 6	12 6*	12 6*	12 6*	
Rand Collieries	0 6*	0 6*		0 6*	0 6*
Rand Mines	52 6*	52 6*	52 6*	52 6*	52 6*
Rand Nucleus	1 1*	1 1*	1 1*	1 2	1 2*
Randfontein Centrals	12 6	12 6*	12 6*	12 6*	
Randfontein Estates	21 6	21 6	21 4*	21 6	21 1
Roberts Victors ...	6 3*	6 3*	6 3*	6 6*	6 0*
Robinson Deep "A"	33 0	33 3*	33 3*	33 3*	33 3*
Robinson Deep "B"	16 0*	17 9	17 7½	17 7½	17 3
Rooibergs		3 0*		3 6+	3 0*
Ryan Nigels		4 0+	4 0+		4 0+
Simmer and Jacks ..	2 8*	2 8*	2 8*	2 8*	2 8*
South African Lands	3 6	3 6*	3 6	3 6*	3 6*
S.A. Reserve Bank	£135*	£135	£135*	£135*	£135
Springs Mines	49 9	50 3	50 0	50 3	50 0
Sub Nigels	11 4*	11 3	11 3*	11 3*	11 0*
South African Alkali		8 0	8 6	8 6	
South African Townships		11 6+	11 6*	12 3	12 0
Transvaal G.M. Estates	10 9*	10 9*	11 3*	11 0*	11 0*
Transvaal Silvers		14 6*	14 0*	14 6	14 3
Union 5 per cent	£101*	£101½*	£101*	£101*	£101
Van Dyks	0 9*	0 9*	0 11+	0 9*	0 9
Van Ryn Deeps	64 0*	65 0	64 0	64 6*	64 0*
Van Ryn Estates			14 0*	15 0	
Village Deeps	12 6	12 6*	12 6*	12 9*	12 9*
Western Rand Estates	2 1*	2 3*	2 1*	2 0	2 3*
West Springs	21 6*	21 9*	21 10½	21 9*	21 6
Western Rand Estates	2 1*	2 3*	2 1*	2 0	2 2*
Witbank Collieries	30 3*	30 0*	30 6*	30 0*	30 3*
Witwatersrands	14 6*	14 0*	14 6*	14 6*	14 6*
Witwatersrand Deeps	14 6*	14 6*	14 9*	15 0	15 0*
Zaaiplaats Tin	5 6*	5 6*	5 6		5 4*

* Buyers. + Sellers.

What the Rhodesian Mines Buy.

Imports of Mining Material and Stores principally used for Mining Purposes, 1919, 1920, 1921 and 1922.

The following list shows the value, at place of purchase, of the imports of the principal mining material and stores into Southern Rhodesia during recent years. The particulars are taken from the Customs Returns and are contained in the recently issued annual report of the Rhodesian Chamber of Mines:—

	1919.	1920.	1921.	1922.
Acid, Sulphuric	£4,374	£4,553	£5,890	£5,180
Assay Apparatus	1,195	4,432	2,382	2.889
Blasting Compounds and Dynamite	58,541	87,900	91,798	99,225
Borax	1,951	1,765	2,159	2,186
Candles	18,075	43,448	34,782	21,491
Caustic Soda	1,121	989	2,201	3,318
Cement	6,976	551	857	1,567
Coal, Coke and Patent Fuel	1,733	—	55	28
Composition—				
Boiler	165	330	709	456
Metal	1.111	2,391	1,649	1,773
Copper Plate and Sheet	537	3,356	999	3,951
Bar	7,545	18,266	6,554	823
Cyanide of Potassium	241	28	326	563
,, Sodium	27,319	36,661	54,278	70,957
Detonators and Fuse	14,474	34,728	43,251	32,676
Electric Fittings, inc. machinery	22,610	70,968	88,332	40,629
Fire Bricks and Clay	15	75	315	66
Grease, Anti-friction	4,854	9,644	7,165	6,320
Iron and Steel—				
Angle, Channel, and T	2,241	1,644	1,816	2,357
Bar, Bolt and Rod	23,896	30,072	36,349	28,154
Chains	2,755	7,256	8,656	1,253
Girders, Beams, Joists	£3,202	£5,604	£3,563	£4,641
Galvanised	1,251	12,228	9,278	6,014
,, Corrugated	15,379	72,986	62,389	35,313
Pig and Ingot	983	1,373	1,546	515
Pipes & Piping	14,988	25,057	29,570	20,268
Plate and Sheet	7,571	8,932	11.459	1.995
Lead—				
Bar and Sheet	361	488	363	444
Foil and Acetate	28	20	21	1.369
Pipes & Piping	45	162	40	57
Lime	2.717	3,144	3,749	2,568
Litharge	115	72	329	601
Machinery—				
Bands and Belting	15,347	24,446	27,661	20,569
Buckets and Trucks	3,301	10,107	9,593	4.946
Mining	38,619	71,784	57,283	43,033
Packing	5,339	7,593	9,282	6,575
Parts	34,373	38,952	110,698	39,514
Pumps	8,000	12,097	19,021	10,504
Oil—				
Castor	5,018	8,057	8,742	648
Lubricating	21,196	36,973	58,186	39,455
Quicksilver	1,016	896	3,961	3,033
Tramway Material	946	4,384	111	198
Waste, Cotton	2.291	2,814	3,791	3.327
Wire Rope	10,969	15,527	9,768	6,358
Wood—				
Handles for Picks, etc.	2,240	1,474	4,636	1,618
Unmanufactured	17,291	47,773	52,867	38,106
Zinc	20,148	14,636	11,015	9,441
	£438,106	£789,636	£899,446	£626,972

Return showing Value of Exports from Southern Rhodesia during the years 1917 to 1922, exclusive of imported Goods re-exported.

	1917.	1918.	1919.	1920.	1921.	1922.
Asbestos	£167,214	£200,159	£240,210	£355,728	£431,028	£287,744
Gold	2,854,939	2,042,859	2,180,578	2,428,219	2,298,596	2,604,508
Concentrates	—	—	1,560	970	300	420
Chrome Ore	264,837	129.831	57,792	200,939	81,262	194,929
Copper Blister	476,711	600,609	449,699	425,211	401,947	415,470
Tungsten Ore	1,295	5,304	2,021	1,500	—	—
Other Ores	35	166	3,594	32,867	20,106	16,729
Coal	11,519	39,076	38,182	44,481	60,601	64,863
Coke and Patent Fuel	79,748	90,959	130,582	106,848	140,786	99,151
Diamonds	3,182	1,586	3,084	2,066	297	1,270
Other S.A. Produce	597,606	691,015	1,008,879	1,560,061	863,989	583,800
	£4,487,086	£3,801,564	£4,116,181	£5,158,890	£4,298,912	£4,268,884

The Mozambique Convention.

The proposed new Convention between the Union and Mozambique continues to be debated at Delagoa Bay, and the visit of General Smuts to Europe is expected to bring things to a head. The Lourenco Marques Chamber of Commerce in committee at a special meeting this week resolved to send a cable to the High Commissioner before his departure from Lisbon for London. The cable is to embody the following points: The Convention must mutually respect each country's interests. It should include deferred pay for mine natives to the extent of a minimum of 7 per cent. for the first four years; the maximum number of native immigrants per annum to be fixed, and for subsequent years there should be a scale of requirements of the Province. The clause in the old Convention permitting returning natives to bring in a certain quantity of luggage free, to be struck out. Products of the soil of both countries to be exempt from import duties. Products of the industry of both countries to pay import duty, but to have the benefit of such reduced tariff as may be mutually agreed on. Merchandise imported into the Union via Lourenco Marques to enjoy the same privileges as goods imported through Union ports. Railway tariffs, both for exports and imports, to be fixed on a mileage basis. Provision to be made for the protection of present and future interests.

INDUSTRIES SECTION.

A Locally Made Battery.

LOCAL INDUSTRIES No. 4: FACTORY TURNOVER THAT HAS INCREASED TENFOLD—UNIQUE FEATURES—MINING INDUSTRY'S ENCOURAGEMENT—AN EXAMPLE TO THE GOVERNMENT.

In spite of the fact that its raw materials have to be mainly imported, and without Government support other than as satisfied customers, the manufacture of dry batteries in South Africa has already, in the short space of three years, established itself as a conspicuous success, and the firm responsible for this highly creditable achievement is already cutting [illegible] [illegible] to the overseas market. This market is of such huge proportions that the figures convey scarcely any reasonable conception of its extent. It is, for instance, stated that the United States alone uses one hundred million cells per annum. One firm has nine factories supplying something like sixty States and countries; Australia uses 3,000,000 dry cells annually, and even South Africa, with its very limited demand, accounts for at least half a million cells each year. The total consumption in the British Empire must be colossal.

Now that wireless installations are becoming in most countries outside South Africa, at any rate, almost a household necessity, the demand for dry batteries will increase enormously, and here is an opportunity for the development of an industry of almost incalculable potentialities. It is pleasing to find that one firm, at any rate, has the enterprise to recognise and, to the utmost of its resources, take advantage of this splendid opportunity. It might be supposed that in the case of an industry that in other countries has reached such an advanced stage of development it might be difficult to secure a foothold. But the partners in the Excelsior Dry Battery Company have not been deterred by this fear, and their confidence seems already to have been justified. Mr. E. Cotton Lloyd, the managing director of this company, told the Special Commissioner of "The S.A. Mining and Engineering Journal" that in its early days this concern was doing a business amounting to only about £30 per month. It has now reached between £400 and £500, and he is confident that before long that figure will again be multiplied tenfold.

The Secret of the Cell.

Asked to what he attributed this success in the face of very formidable overseas competition, Mr. Cotton Lloyd said that thanks to the discoveries and research of his partner, Mr. J. W. Grant, whose technical knowledge is coupled with the keen commercial capabilities of the business head of the firm, the Excelsior Dry Battery possesses certain qualities that enable it to challenge the competition of batteries of world-wide repute which have enjoyed almost undisputed supremacy for several years past. Naturally, the partners retain the secret of their cell, but it consists largely in a certain ingredient, added to which skill and extreme care in the selection and combination of the materials that are used in the manufacture of the cells. So confident are they that their secret cannot be discovered that they have not taken the trouble to protect it. They know that makers of foreign batteries have sought by repeated analyses to ascertain the exact composition of the Excelsior cell, but so far as at present known, without success.

The company indeed looks with confidence to a challenge; Mr. Cotton Lloyd says he is prepared at any time to have its dry batteries tested against imported makes and will supply batteries to any Government [illegible] authority for the purposes of such a test. A number of tests have already been made. One of these was an output test, the batteries being discharged through 10 ohms resistance continuously. The initial E.M.F. of [illegible] cell was 1.580 volts, and whereas the imported cell dropped to 0.75 volt after 19½ days, the Excelsior did not reach that point until nearly 18 days later, thus indicating a 92 per cent. superiority in output. The other test was with regard to polarisation and recuperation. The initial E.M.F. of the Excelsior was [illegible] volts and of the imported cell [illegible] volts. The cells were discharged for one hour through [illegible] ohms resistance and then allowed to recover for an hour. In this test also the Excelsior cell showed very marked advantages.

Another point of superiority claimed for the South African cell is in the important matter of deterioration. Mr. Grant, in fact, assures us that up to a period of at least two years they actually increase in strength during storage. This feature is, of course, vital from the point of view of the export trade. In this connection it was satisfactory to learn that one of the most eminent firms of electrical material manufacturers in England has recently approached the firm with suggestions in regard to the sole agency for the Far East, India and Australia, and asked for quotations for supplying the enormous requirements of those countries.

Chance for South African Materials.

The South African dry battery industry, therefore, has now gone far beyond the experimental stage, and the only question of public interest is the capacity of the firm to cater for the immense market. If this can be done there is no doubt that another local industry of very great value to the country can be developed. At present, it is admitted, its sphere from the point of view of employment and utilisation of local raw materials is limited.

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"We purchase what raw material we can locally," said Mr [illegible] Lloyd, "but the insulation material has at present to be imported. There are mineral deposits in this country, but unfortunately [illegible]. The necessary plant is of an expensive character, but, if we had sufficient encouragement, we could in time manufacture practically everything from South African material." Graphite, it is common knowledge, is one of the materials required, and this can be obtained in South Africa, but the absence of a refined graphite is [illegible] at present. South African graphite is only 80 per cent. pure, whereas a purity of 95 per cent. is necessary in the manufacture of Excelsior dry batteries.

Another Factory Proposed.

For the time being South Africa offers a fairly wide scope for the operations of the company—and this market will, as has been stated, expand enormously with the development of wireless. The immediate objective of the company is to oust the foreign product from the South African market and then to cater for the whole of the Empire, which is regarded as quite within the range of possibility. The Governments of the British Empire at present purchase at least two-thirds of their requirements from foreign sources. Denmark, Sweden, as well as America have hitherto enjoyed almost a monopoly in this trade. The Excelsior firm, if given sufficient encouragement, intend to increase their present manufacturing capacity by the erection of another factory—possibly at Capetown. Financial considerations are, of course, an important factor and in this connection it is interesting to learn that developments are in contemplation which will widen the interests of the present company.

One pleasing aspect of the success which has so far marked this enterprise is the partners' ungrudging acknowledgment of the support they have received from the mining industry. "They have given us the business on every possible occasion, and have told us candidly that since they used our batteries they have very largely increased the use throughout the industry of this article. The mining interests have certainly played the game with a local industry, so far as our own experience goes," said Mr Lloyd Cotton, "and we are glad of this opportunity to say we are very grateful for this help."

It should be explained that the dry batteries are not regarded as in any way competing with carbide as an illuminant, and that this sister industry has, therefore, nothing to fear from its rivalry. The dry batteries are used in certain forms of hand lamps, torches, etc., as well as for telephones, bells, buzzers, etc. on the mines, but there is a distinct field for both of these local products, and the firms associated with each are working in closest harmony. It is pleasing, therefore, to add this acknowledgment of yet another instance to those local industries previously described in our columns as having been helped by the mining industry.

LOW TEMPERATURE CARBONISATION.

New Process with Possibilities for South African Coal.

Colliery proprietors and their advisers and fuel engineers, generally, in this country are following with close interest recent researches in Great Britain with regard to low temperature carbonisation, as it is recognised that any really satisfactory solution of this problem must have far-reaching results on the utilisation of the enormous resources of coal in this country which at present are regarded as little more than waste.

In view of unfortunate experiences in this country in the carbonisation of coal and the absence of any carbonising industry—three by-product plants in the Transvaal having closed down—any suggested new scheme naturally meets with a good deal of suspicion and has a lot of prejudice to overcome. At the same time the carbonisation and by-product industry is one offering tremendous possibilities for this country and sooner or later it will be seriously tackled. There is, of course, always a market for clean, smokeless fuel such as a low carbonisation process would provide in addition to the many valuable by-products such as benzol, naptha, ammonium sulphate, tar, etc.

Interest in this potential industry has lately been revived by the reports from overseas of further researches which suggest that a solution of the problem has been reached, though the experts here are awaiting fuller details before committing themselves to any definite opinion as to the possibilities. A recent contribution, which is, however, very hopefully regarded, is contained in a paper read before the North of England Coke Oven Managers' Association by Mr Stanley Morgan, M.Sc. The author said he believed the treatment of coal by low temperature carbonisation was right and profitable, but not by present processes. In 1918, in common with others, he happened to be up against the difficulty of heating charcoal. They had tried thin layers, gas circulation, and everything else they could think of, without success, but a process was ultimately devised in which the charcoal was completely immersed in molten lead. Heating to the required 350 degrees Centigrade, took fifteen seconds, as against four hours. Since that time the lead bath had been successfully applied on a large scale to the distillation of coal tar oil and many other things. He had used it for such widely different purposes as alkali fusion, synthetic phenol and beta naphthol, and the drying of many other things, including coal. He believed it would find still more uses, but it seemed to him the most obvious way to distil coal.

Suitable for Powdered Coal.

With a properly designed bath the throughput would be enormous, because the time-factor was so low. With powdered coal he should suggest nothing else. The factor would be of the order of two minutes, as against hours in other processes. By taking care to have the whole of the lead in motion, a very efficient heat transfer was effected. They got a very rapid distillation, each particle of coal was treated equally, the gas vapours got away quickly, and little or no cracking ensued. The liquid products were very fluid, containing little pitch and of excellent quality. The yield of petrols was greater than that of benzoles by the higher-temperature process. The gas was of high quality, about 750 B.Th.U., and, as it was only formed to the extent of about 4,500 to 5,000 cubic feet per ton, the condensing capacity was reduced to the minimum.

Better and Cheaper Gas.

They had, therefore, a retort which was of low capital cost, because of its high rate of treatment, and a condensing plant of smallest dimensions. They should procure a saleable fuel which would give smokeless fires, but which would burn pleasantly. The semi-coke would be excellent for steam raising—better than coal. The gas would be far greater in every respect than at present distributed. It would be richer, less poisonous and less liable to choke in mains, no naphthalene being present. It would cost less to purify, containing no high-temperature sulphur compounds, such as carbon bisulphide, and it would be cheaper. There would be a large quantity of ammonia sulphate formed in the primary distillation; and since subsequent treatment in the simple owing to the presence of tar, it was probable that a very large total increase would result. He did not think the problem was so simple as washing coal; but he was just as certain that it was not so difficult as making metallurgical coke in ovens. If the process he outlined did not fill the bill, others would be devised, but this process seemed to open up great prospects of success.

In view of the increasing requirements for metallurgical coke in connection with the development of the steel industry in South Africa and the proposed erection of new gas works in Johannesburg and other industrial centres, and the availability of almost unlimited quantities of small coal in this country, the process certainly seems to be worth consideration here, and one local expert who has had very considerable experience in carbonisation plants all over the world said, in conversation with the writer, that it seemed to him to be the most practicable and promising method so far devised.

TRADE SECTION.

Week in the Mining Material and Engineering Trades.

IRON AND STEEL—HERE AND ELSEWHERE—TIMBER AND BUILDING MATERIALS—RECENT TENDERS—AGRICULTURAL IMPLEMENTS IN DEMAND.

There is nothing very special to report about business generally. Engineering shops are still going along steadily not much to speak about, but with just sufficient work to keep on, the larger departments living hopefully until better times come along in the way of tenders, which are, it is said, imminent. Timber merchants are looking forward to having sufficient new stocks early next month; ships containing these are now reaching the coast. This new timber will be welcomed and be of great service to builders and contractors generally.

From all reports the coast towns are keeping fairly busy and have no reason to grumble at the amount of trade coming through some of their ports from the Union. Some large clips of wool have been secured and are finding their way to the coast for export, which will, of course, tend to increase the circulation of money throughout South Africa and engender a spirit of hopefulness among merchants.

The substantial decline in working costs during the past year by the New Modderfontein G.M. Company to an average of 16s. 8d. per ton milled is welcomed by the community as an earnest of what the mining industry generally is likely to do in forthcoming months, provided no untoward happenings occur. On the whole, despite present dark clouds overseas, the future outlook, especially of the Union, is more promising than it has been for a long time.

Iron and Steel.

Business on the whole is quiet, although one or two merchants report a better demand and more inquiries. There is a better demand for steel plates now, in which there is a scarcity in one or two sizes. Prices on the whole remain fairly constant.

Britain: Mail Advices: Iron and Steel.

The Outlook.—Holiday conditions (August 18) continue to prevail in the iron and steel markets, and business has been at a low ebb. The depreciation in Continental currencies has resulted in the shading of prices on one or two small transactions, but, generally speaking, as the franc depreciates, the French and Belgian manufacturers advance their quotations. Business, however, continues to be disappointing, as it is confined to small prompt parcels. Of late there has been an increase in the volume of inquiries from overseas markets; but so far very little of this has materialised into actual business. In some quarters, however, it is taken to indicate the probability of a trade revival in the early autumn. Most of the British works have resumed operations after the holidays, but in few cases has their position been improved by an accumulation of orders during the week.

Pig Iron.—There has been no improvement in the demand for pig iron, and prices have weakened still further. Northamptonshire foundry has been quoted in the Midlands at 102s. 6d. delivered. Cleveland iron is reported to have been sold at 101s. delivered Glasgow, whilst Scotch No. 3 has been sold at 105s. delivered. The amount of business which has passed in Continental iron has been small, although an order for 1,200 tons was placed at 100s. per ton delivered Falkirk. Offers of pig iron are reported at 90s. delivered Midlands, but little business has been transacted. The market for basic iron is apparently dead for the time being.

Semi-finished Material.—Prices for semi-finished material are irregular, and transactions in Belgian 2in. billets are reported at £7 7s. 6d. to £7 10s., and in sheet bars at about £7 12s. 6d. A few small transactions in Continental billets have taken place at £6 10s., but French and Belgian producers have little chance of competing with the British works at the prices at which the latter are prepared to do business. For wire rods there is still a fair demand, British material being quoted at £12 10s., with Continental manufacturers asking £10 10s. f.o.b.

Finished Materials.—Demand is small and competition keen for any orders which come into the market. The recent reduction of 5s. per ton on ship plates and sections by the Scottish works has not succeeded in stimulating business. Competition in plates has developed from the Saar Valley, and an order amounting to about 7,000 tons of ship plates to Lloyd's test, was taken this week by a Saar works at £8 f.o.b. Continental sheets, ⅛in. and 1/16in., have been quoted at £8 10s., and ¼in. and 3/16in. at about £8 f.o.b. Quotations for bars have varied considerably. Some Continental merchants are reported to have quoted as low as £7 12s. 6d., but Belgian works generally are asking £7 17s. 6d. to £8 f.o.b., without finding many buyers. Tin plates continue at the scheduled price of 23s. 1½d. for 20 by 14 basis f.o.b. Swansea.

Galvanised Sheets.—Quotations are maintained at £8 10s. to £8 12s. 6d. for 24 gauge corrugated sheets in bundles.

The Ruhr Steel Stocks.

The Ironmonger, in an editorial a week ago, draws attention to this important matter and says, *inter alia*: From the time when it became evident that the French and Belgian authorities did not intend to allow iron and steel material which had been sold to British firms to leave the Ruhr, apprehension has been felt in Britain as to what would happen to the market when, at last, the accumulating stocks on the Ruhr were released. So far no definite statement has been forthcoming concerning the quantity of raw and finished steel material lying at the Ruhr works, but it is known to be very large, and the figure of 2,000,000 tons at which rumour places it, is not considered impossible in well informed quarters. Part of the material has been sold by the German producers to neutrals all over the world. The French authorities have seized a great deal of the material intended for Germany, and, if report speaks truly, some of that sold to British and neutral buyers as well, and the French Government is now considering the best method of disposing of about 600,000 tons of these seized products, which consist partly of manufactured goods and partly of iron ore. It is stated that the ore will be resold through existing commercial organisations, and it is suggested that the scrap and cast iron should be handed over to French foundries and the semi-finished materials to the French steelworks.

The question of the disposal of the finished goods, however, is surrounded by difficulties. There are, it is stated, 200,000 tons of rails, girders and other such material in the possession of the French on the Ruhr and the possibility that this may be thrown on the market has alarmed not only the British steel makers, but also the French manufacturers. Some of it would be used in the devastated regions, and it is proposed to ship 25,000 tons of rails to the Sahara, but this would still leave a considerable balance to be got rid of, and it is not unlikely that a special syndicate will have to be formed to liquidate it. At any rate, British steel makers cannot view with equanimity the prospect of their French fellow-manufacturers being supplied with raw and semi-finished materials on conditions which may enable them to undersell competitors in the export markets of the world.

Steel Works Restarting.

The Dowlais Iron Works of Guest, Keen and Nettlefolds, Ltd., restarted on August 13, after a short idleness.

Unemployment at Jarrow.

The numbers of unemployed at Jarrow have been increased to 5,580, which is about one-sixth of the population. The effects of the boilermakers' dispute are being increasingly felt, and the boiler works of Palmers' Shipbuilding and Iron Co., Ltd., have been closed.

Blast Furnaces Damped Down.

Whitwell & Co., Ltd., have damped down two blast furnaces at their Thornaby Ironworks at Stockton-on-Tees. These were only restarted about three months ago, after being idle for almost two years. Since June no fewer than seven furnaces have been stopped on Tees-side owing to lack of orders.

Iron and Steel Output.

The National Federation of Iron and Steel Manufacturers report that the production of pig iron in July was 665,100 tons, compared with 692,900 tons in June. The furnaces in blast at the end of July numbered 206, a decrease of 16 during the month. The output of steel ingots and castings was 624,300 tons, compared with 767,700 tons in June.

Iron Ore Miners' Wages.

The current (August) monthly ascertainment of the Cumberland hematite iron, mixed numbers, upon which the iron ore miners' wages for the ensuing month will be based, is £5 11s. 7.50d. per ton, as compared with the previous month's price of £5 17s. 2.58d. per ton.

Wholesale Prices.

The Board of Trade index number shows a fall of 1·8 per cent. in the general level of wholesale prices in July compared with the average for June. Only four of the 97 industrial materials were dearer in July than in June, and 74 were cheaper. All the descriptions of pig iron were cheaper, the largest fall being one of 10 per cent. in the price of hematite west coast mixed numbers. The figure for the iron and steel group has fallen to 148 and that for "other metals and minerals" to 139·3.

Overseas Trade in July.

The hope that the contraction of trade in June was but a temporary set-back has not been realised, as the Board of Trade returns for July show a further considerable shrinkage. The dockers' strike and unsettlement arising on account of the unsettled political situation on the Continent have contributed largely, no doubt, to the fall in imports from £81,897,683 to £76,818,334. The total value of imports up till the end of July is £615,568,899, compared with £568,816,950 for 1922. With exports and re-exports down by £5,534,658, the apparent adverse balance of home trade for July amounts to £18,511,501, a reduction of £6,954,631 as compared with the June figures. These results confirm the opinion expressed previously that improvement in trade of any magnitude cannot be looked for until more stable conditions prevail in the industrial and political world.

Import Trade.—Detailed examination of the returns as far as imports are concerned shows that iron and steel and manufactures thereof slightly increased in tonnage, but were of lower value as compared with those received in June. Britain took 111,142 tons, valued at £1,155,565, in July, and 105,124 tons, valued at £1,157,897, in the previous month. 482,046 tons of iron ore were received in July, as against 565,656 tons in June, 1923, and 287,213 tons in July, 1922. 72,772 tons of the ore came from Sweden, 21,992 tons from Norway, 171,633 tons from Spain, 93,707 tons from Algeria, 5,200 tons from Greece, and 32,041 tons from Tunis. In June the distribution amongst these countries was respectively as follows: 69,630, 48,877, 251,216, 62,901, 12,255 and 26,476 tons. Pig iron was higher at 1,485 tons by 921 tons of basic steel. 1,102 tons were taken from Belgium, against 1,006 tons in June. Lead, pig and sheet, was lower by 7,071 tons at 12,012 tons.

Exports.—Of the five millions fall in the export trade for July as compared with June, iron and steel and manufactures thereof accounted for one million sterling. In this category was included pig iron shipments, which amounted to 17,454 tons, as compared with 28,098 tons. The tonnage sent to Belgium, however, showed a considerable increase, 8,682 tons against 2,537. Italy also took 2,572 as against 1,045 tons, whilst French exports decreased to 1,319 from 2,357 tons. Bars, rods and angles suffered a general diminution to 2,796 from 4,041 tons. Sheets also were lower by 10,000 tons at 13,801 tons. Although galvanised sheets were 7,000 tons lower, an increase of 1,000 tons in shipments to South Africa took place. Australia took 3,000 tons less, however. Tin plates were generally lower by 10,000 tons. Machinery exports receded to the extent of nearly half a million sterling; on the other hand, electrical machinery was higher by £37,248.

For the period January to July, 1923, British imports had a total value of £615,568,899, exports £442,182,777 and re-exports £72,663,767, making the total apparent adverse balance of home trade £100,722,355. The corresponding figure last year was £92,678,361.

Quotations.

Pig Iron.—Cleveland No. 1, 110s.; No. 3, 102s.; No. 4 forge, 95s.; mottled, 94s.; basic, 97s. 6d.; hematite, mixed numbers, 98s. 6d. Scotland: No. 1 G.M.B., 107s. 6d.; No. 3, 102s. 6d.; hematite, f.o.t. steelworks, 110s.; Midlands, 85s. to 95s.

Finished Iron and Steel.

Iron.—Crown bars, £12; best bars and angles, £12 10s.; tees, £13.

Steel.—Billets, soft, £8 15s.; hard, £9 10s.; bars and angles, £9 10s.; tees, £10 10s.; joists and channels, £9 15s.; sheets, singles, £13; doubles, £13 10s.; lattens, £14 5s.; plates, ship, £10; boiler, £13; rails, £9 10s.

Wire Nails and Sheets.

Galvanised wire in 1 cwt. lots, fencing wire, 4 to 8 gauge, 22s. per cwt.; bundle wire in 7 lb. rings, 8 gauge basis, 29s. 6d. per cwt.; strand wire in ½ cwt. coils, 7 ply by No. 4 basis, 29s. 6d. per cwt.; barbed wire in ½ cwt. reels, 25s. 6d. per cwt.; wire nails, 0 to 7 gauge, 16s. 6d. to 18s. per cwt.; cut steel nails, 3 in. to 6 in. clasp, in 2 ton lots, 19s. 6d. per cwt.; galvanised corrugated sheets, 22 to 24 gauge, 22s. 6d. per cwt.; flat steel sheets, 22 to 24 gauge, galvanised, 26s. per cwt.; black, 20s. 6d. per cwt. Bolts and nuts, 50 per cent. discount. Staffordshire common bars, 15s. 9d.; and galvanised corrugated sheets, 22s. 6d. per cwt.

Oils and Paints.

Motor spirit, 1s. 5½d. to 1s. 10d.; linseed oil, raw 3s. 9d. to 4s.; boiled 3s. 9d. to 4s. 1½d.; gas engine oil, 2s. 7d. to 2s. 8d.; paraffine oil, 1s. 11d. to 2s.; separator oil, 4s. 1d. to 4s. 3d.; colza (pure), 4s. 8d. to 4s. 11d.; petroleum, 11d. to 1s. 2d. per gallon. Paints, in 5 cwt. lots, 70s.; red lead, 42s. to 43s.; white lead, 43s. 6d. to 52s. 6d.; zinc oxide, 37s. 6d. to 50s.; turpentine, 6s. 6d. to 6s. 9d.

Agricultural Implements.

Merchants report good business in ploughs, mealie planters, etc. Farmers have now harvested their mealie crops, and are spending pretty fairly in the shape of implements.

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Electric Goods.

Dealers state that the past fortnight has been a very poor one in respect of business. Prices remain practically unchanged but no lower quotations from overseas expected just now.

Timber and Building Materials.

Business in the timber trade has been quite fair this week. There are shortages of stocks now, and large additions are expected next month. Prices are unchanged. The building trade has been middling, only a fair amount of building is going on at present. The expected large contracts have as yet not materialised, but their release is anticipated very shortly. Prices for bricks and building material remain unaltered.

Second-hand Iron and Timber Yards.

These report business as being very quiet at the moment, with a shortage of stocks and unaltered quotations for second-hand material.

Town Council and Recent Tenders.

Accepted.—Sauer & Franks, Ltd., two 10,000 amp. Busbar shunts complete with meters and leads, at £70 each, £140; one 8,000 amp. Busbar shunts complete with meters and leads, £60; J. Anderson, Ltd., 2,500 ft. of 6 in. piping at 4s. 1d. per ft., £510 8s. 4d.; I. Russell & Co., Ltd., 7,000 ft. of ½ in. galvanised piping at 3½d. per ft., £102 1s. 8d.; Stewarts & Lloyds, Ltd., 7,000 ft. of ¾ in. galvanised piping at 4·42d. per ft., £128 18s. 4d.; Stewarts & Lloyds, Ltd., 500 ft. of 9 in. wrought iron Kimberley piping at 8s. 7d. per ft., £214 11s. 8d.; the Telegraph Manufacturing Co., 9,600 ft. of twin and concentric cable at 1s. and 1s. 8¼d. per ft., £593; Henley's S.A. Telegraph Works Co., Ltd., 5,000 yards twin cable at 1s. 9¼d. per yard, £442; 3,000 yards 3-core cable at 5s. 3⅜d. per yard, £792; 3,850 yards ·6 x ·6 concentric cable at 19s. 7½d. per yard, £3,777; Metropolitan Vickers (S.A.) Electric Co., 10,800 yards twin, 3-core, triple concentric and twin concentric cable at 2·28s. to 2·64s. per yard, £2,748; Niven & Mitchell, 10 tons coach screws at £27 per 2,240 lb., £270; Stewarts, Sanders & Co., 10 tons at £35 10s., £355; Hubert Davies & Co., Ltd., 1,000 watertight suspension fittings at 4s. 6d. each, £225; Wm. Hosken & Co., Ltd., 2,000 lb. felt at 2s. 6¾d. per lb., £256; supply of cement for twelve months from 1st November divided equally between the Pretoria Portland Cement Co. and White's (S.A.) Cement Co., at 92s. per 2,000 lb. net; Dunswart Iron & Steel Co., 60,000 lb. tyre iron at 17s. per 100 lb., £510; Sykes & Co., Kent water meter spares, £275; British Agencies, Ltd., 150 new Niagara meters, £441.

Recommended.—H. Davies & Co., Ltd., two travelling cranes, £481; Winstow & Knep, 1,200 cub. ft. Burmah teak at 13s. 3d. per cub. ft., £795; Hubert Davies & Co., Ltd., one air compressor complete, £178 10s.; Hubert Davies & Co., Ltd., four portable direct current recording Ammeters at £35 7s. each, £141 8s.; General Garage (S.A. General Electric Co., Ltd.), one truck trailer complete, £192 10s.; Geo. Stott & Co., Ltd., 140,000 lb. of 1 in. x ½ in. and ⅞ in. x ½ in. horseshoe bar iron at 17s. 8d. per 100 lb., £1,236; Stewarts & Lloyds (S.A.), Ltd., 10,500 ft. 6 in. wrought iron screwed and socketed piping at 4s. 4½d. per ft., £2,296; Sturrock (S.A.), Ltd., one Ashworth & Parker non-condensing, non-lubricated cylinder engine complete with accessories, £2,025.

Box 3807. Tel. 5892.

WRIGHT'S ROPES

H. ALERS HANKEY - - - Sole Agent.

DIAMONDS FROM ARKANSAS.

Nearly 6,000 diamonds have been found in diamond mines in Arkansas, and some stones have been picked up in other states. The diamond fields of Arkansas are in Scott County, where a valuable diamond was first found in 1906 by John Huddleston, a farmer. The mule he was riding happened to kick up a stone of unusual brilliance, which caught his eye. He dismounted, picked up the stone and put it in his pocket, and a few days later the performance was repeated. The stones were sent to Tiffany, of New York, whose expert said "diamonds," and soon afterward Mr Huddleston is said to have sold his 40 acre farm for $36,000. Though the diamond field of Arkansas has never achieved greatness, it has yielded a considerable number of fine stones, the largest weighing 21¼ carats. Another stone weighed 17·86 carats. Many of the Arkansas stones are as fine as any found elsewhere, and, according to George F. Kunz, of Tiffany's, they include a large proportion of white stones, most of them of a high grade in colour and brilliancy and freedom from flaws. Dr Kunz further states, in describing several of the yellow, brown, and white stones from Arkansas, that "these are absolutely perfect and are equal to the finest stones found at the Jagersfontein mine or that were ever found in India." A few of the Arkansas diamonds, it is said, have sold for as high as $600 a carat. Most of them, however, are uncut and have been placed in private and museum collections. Diamonds do not occur in clusters, nor are they gathered together in the volcanic "pipes" of mother lodes in which they are found. The average recovery in the African diamond mines is about one carat to two tons of ore, and the average recovery in the Arkansas mines has been about one carat to eight tons of ore. The diamond deposits of Arkansas are described in a report recently issued by the Geological Survey, as Bulletin 735-I, entitled "Diamond-Bearing Peridotites in Pike County, Arkansas," by Hugh D. Miser and Clarence S. Ross. The report includes a description of the diamonds and the enclosing rocks, compares the deposits with those in the diamond fields of South Africa, and contains geologic maps and pictures of the mines and the diamonds.

We have received from Messrs. Brunner, Mond and Co., Ltd., of Northwich, through Mr. Nicholson, a valuable brochure dealing with water treatment. The work is divided into fourteen chapters and covers every phase of water purification.

INVESTORS' DIARY.

Forthcoming Company Meetings.

(a) Annual general meeting; (s) special or extraordinary general meeting.

Meetings will be held in Johannesburg unless otherwise stated.

Sept 20.—Transvaal Gold Mining Estates, Ltd. (a), 3.30 p.m.

September 28.—Simmer and Jack Proprietary Mines, Ltd. (a), 11.30 a.m.

November 6th.—New Modderfontein (a), 10.30 a.m.; Nourse Mines (a), 11.30 a.m.; Consolidated Main Reef (a), 12 noon; Modderfontein East (a), 2.30 p.m.

November 16.—Sub-Nigel, Ltd. (a), 11.30 a.m.

December 13.—Glynn's Lydenburg (a), 3.30 p.m.

November 20: Johannesburg Consolidated Investment Co., Ltd. (a), 11 a.m.

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